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APRIL 1959

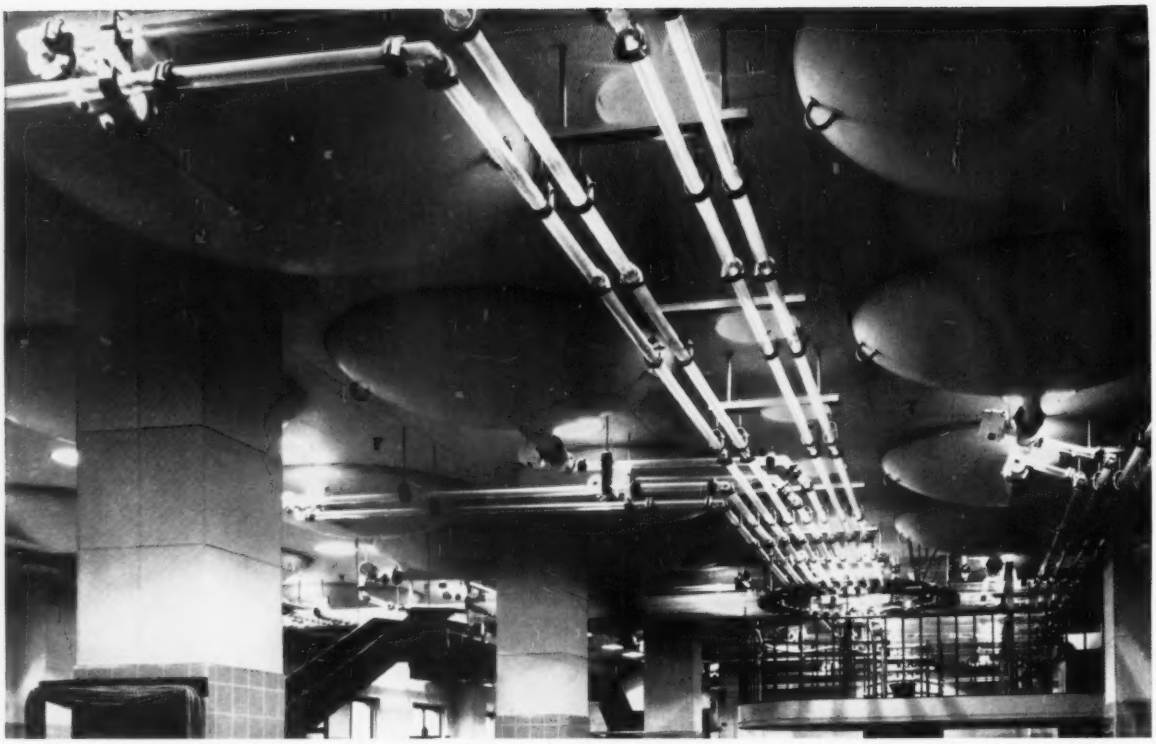
$1.00

FOOD ENGINEERING

FOR MANAGEMENT IN MANUFACTURING, PACKAGING, MARKETING

A McGRAW-HILL PUBLICATION

Draws bead on booming youth market p. 49



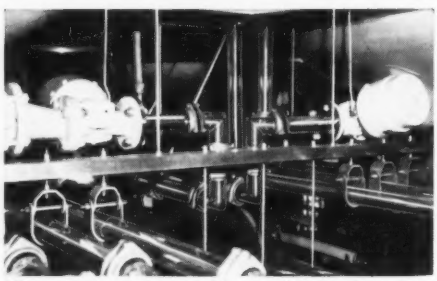
Glass-lined tanks, lower sections of which can be seen in photo above, stockpile liquor. Glass-lined Grinnell-Saunders Diaphragm Valves, with power operators, regulate the flow of liquor from tanks to glass-lined pipe leading to selector ring, where it is conveyed to the bottling machine.

Providing positive control of liquids for the Liquor Control Board of Ontario

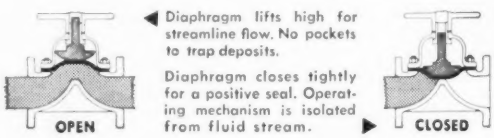
Proper liquor blending, filtering, conveying and bottling are important at the Liquor Control Board of Ontario in Toronto... but overriding all else is the need for protecting product purity. Grinnell-Saunders Diaphragm Valves were installed to provide not only positive fluid control, but this vital product protection as well.

Because of the design of the valve, there is no chance of contamination due to the product coming in contact with the valve mechanism or lubricant. There are no pockets in which the product can collect. When properly installed, Grinnell-Saunders valves are self-draining. Maintenance is no problem, either. The only part of the valve normally subject to wear is the diaphragm. This can easily be replaced without removing the valve body from the line.

Grinnell-Saunders Diaphragm Valves can be supplied with handwheel or power operation, also with lever operation in small sizes. They are available with a variety of body sizes as well as body, lining and diaphragm materials to meet a wide range of services. For details, write Grinnell Company, Inc., Providence 1, R. I.



Close-up view showing stainless steel Grinnell-Saunders Diaphragm Valves mounted 15° from the horizontal for easy self-draining. After a run, tanks and valves are readily cleaned and flushed with the usual solutions.



◀ Diaphragm lifts high for streamline flow. No pockets to trap deposits.

Diaphragm closes tightly for a positive seal. Operating mechanism is isolated from fluid stream. ▶

GRINNELL-SAUNDERS DIAPHRAGM VALVES

Grinnell Company, Inc., Providence, Rhode Island • Coast-to-Coast Network of Branch Warehouses and Distributors

pipe and tube fittings • welding fittings • engineered pipe hangers and supports • Thermolier unit heaters • valves
Grinnell-Saunders diaphragm valves • pipe • prefabricated piping • plumbing and heating specialties • water works supplies
industrial supplies • Grinnell automatic sprinkler fire protection systems • Amco air conditioning systems

For more data, circle 246 on Reader Service Card

FOOD ENGINEERING FOR MANAGEMENT

APRIL, 1959

30th YEAR

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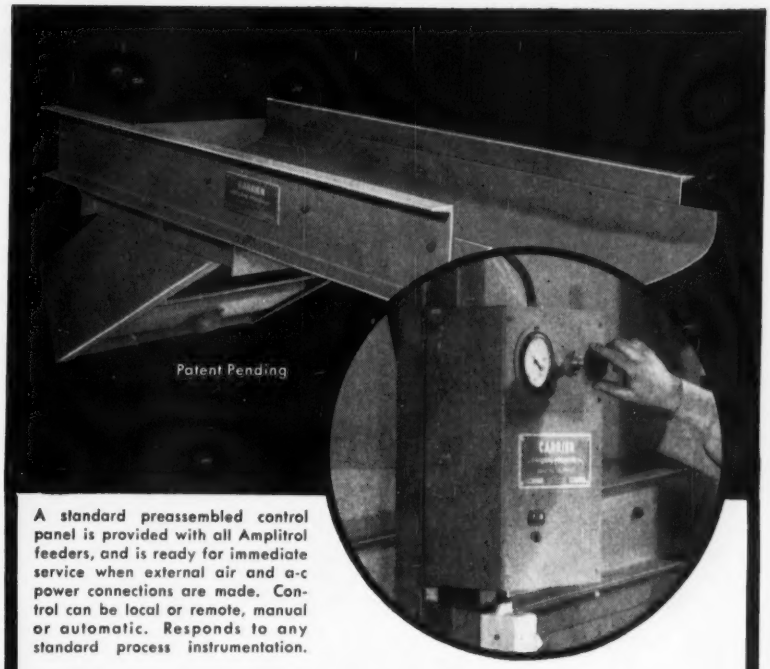

A standard preassembled control panel is provided with all Amplitrol feeders, and is ready for immediate service when external air and a-c power connections are made. Control can be local or remote, manual or automatic. Responds to any standard process instrumentation.

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LESS DAMPING . . . Amplitrol feeders increase vibrating stroke *automatically* when headload is increased. This allows you to use larger bin openings . . . bigger headloads . . . and to discharge bigger capacities of almost any material.

FULL-RANGE CONTROL . . . A new, highly simplified pneumatic system allows accurate, full-range stroke control. The heavy-duty air springs respond *immediately* to a pneumatic signal from a standard 0-80 psi air pressure valve. No lag.

LESS MAINTENANCE . . . Amplitrol feeders have no chains or v-belts . . . no large revolving weights or bearings . . . no auxiliary electrical parts . . . no gears or guards . . . NEW AMPLITROL FEEDERS ARE JUST THAT SIMPLE.

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DISTRIBUTE ● ELEVATE

For more data, circle 248 on Reader Service Card

• Follow the Profit Parade in Sweet Corn Harvesting

Three of 26 FMC Sweet Corn Harvesters at work cutting costs for Illinois Canning Company and their growers.

One FMC Harvester replaces up to 15 hand pickers—cuts picking costs up to 57%!

No wonder the FMC Sweet Corn Harvester is first choice among canners, growers and operators alike! Savings in picking costs alone quickly pay for these rugged, efficient units, with one FMC Harvester replacing 10 to 15 hand pickers for a reduction of up to 57% in costs! There's a 10% bonus in increased cut-off weight, too—up to 10% more yield per ton over hand picked corn.

Works day or night...lets you pick 'round the clock—when you, the corn, and your plant are ready. Picking delays and interruptions common to hand picking operations downgrade product quality and disrupt plant schedules. That's why each season finds more growers switching to FMC Sweet Corn Harvesters – always dependable, always on the job when there's picking to be done.

Broad flexibility and adaptability. The FMC Harvester is the *only* machine specifically designed for sweet corn harvesting. It can be mounted on practically all types and models of tractors, is extremely simple to operate, with all controls convenient to the driver. Its trouble-free dependability has been proved season after season, under all conditions—in heat, dust, rain, rough fields – in night and day operation.

Now is the time to plan for smoother, more profitable plant scheduling. So plan ahead with FMC Harvesters for consistently higher yields this season at lower costs.

Putting Ideas to Work

FOOD MACHINERY AND CHEMICAL CORPORATION

Canning Machinery Division

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TRENDS & FORECASTS

SPECIAL FOOD SERVICE to EXECUTIVES

Business will continue rising through '59, perhaps moving up faster in spring than later in year because of steel strike threat, in opinion of McGraw-Hill Department of Economics.

Retail food sales continue higher than in '58. Volume was $8.2 billion in January-February, up 4.1% over same period in '57.

Capital expenditures by food and beverage companies now are estimated at $198 million for January-March '59 and $220 million for April-June by Department of Commerce. Previous report put January-March figure at $173 million.

Four-fifths of retail food business will be handled by 30,000 stores in '70. So predicts Robert T. Browne, Pillsbury marketing executive.

New can pricing programs are insufficient to change attractiveness of Libby's can making program, says President Charles S. Bridges.

Food processing will expand rapidly in Western Europe, predicts Junius F. Allen, Heinz international executive. Higher living standards are accelerating demand for convenience and quality foods, and many women work.

U. S. exports of prepared and packaged foods to European Common Market will decline, in opinion of *The Economist*. But American food companies are expected to establish plants inside Common Market area.

In two decades canned vegetable consumption gained 25.5 lb. to '57 figure of 75.6 lb. Frozen vegetables increased from 0.95 lb. to 11.4 lb., and fresh vegetables dropped from 49.3 lb. to 39.8 lb.

Per capita canned food use of 137 lb. in '59, at better prices, is predicted.

Consumption of chicken meat in '59 will be about 30 lb. per capita compared to 28.2 lb. last year, USDA forecasts. Broilers will account for about 75% of total.

Retail sales of frozen foods this year are forecast at $3 billion, up 20%.

Potato chip sales increased 10% in '58 to $550 million, Potato Chip Institute reports. A billion dollar volume is forecast within 5 to 10 yr.

Processors will contract and grow 9% smaller acreage of green peas for processing in '59. Freezers are stepping up acreage 13%, while canners are cutting acreage 17%.

Prospective acreage of tomatoes for processing is down 14% to 308,800.

Cranberry sauce pack increased 6.7% last year to 6.1 million cases. Canned lemon juice gained 13.5% to 1 million cases. Pimiento pack jumped 37.3% to 1.3 million cases. Canned okra skyrocketed to almost 1 million cases, NCA reports.

Per capita margarine consumption hit new high of 9 lb. last year, while butter consumption remained at '57 record low of 8.4 lb. Further increase is forecast for margarine in '59, with butter remaining at current level.

See Developments to Watch p. 13

The big PLUS SERVICE EXPERIENCE RESEARCH PERFORMANCE in Oakite

Cleaning in-place cuts downtime from a week to an hour for canner

IN-PLACE CLEANING with modern Oakite materials produces truly remarkable results. For example:

Juice lines at one packing plant had become so caked with grape juice residue that black specks appeared in lighter colored runs. Half of the lines were dismantled and several men spent *a week* cleaning them manually.

Then the Oakite man urged in-place cleaning of the remaining half of the lines. A heated Oakite solution was circulated for 35 minutes through the pipes, which were then flushed. Results: *100% clean*—all in less than an hour.

The big PLUS in Oakite

Working with Oakite brings you the latest information on mechanized cleaning methods, on products that do the job. It means an end to waste of time and materials. It provides the advantages of constant cleaning research . . . a wealth of experience . . . *guaranteed* performance.

Ask your local Oakite man to demonstrate in your own plant, or send for Bulletin F-9414, which gives details. Oakite Products, Inc., 26G Rector St., New York 6, N. Y.

OAKITE SCIENCE

50 1909-1959 *years' leadership in industrial cleaning*

Technical Service Representatives in Principal Cities of U. S. and Canada

Schedule of Events

April

16-19—National Independent Meat Packers Assn., annual meeting; Palmer House, Chicago.

17-18—National Fruit & Syrup Mfrs. Assn., annual convention; Savoy Hilton Hotel, N.Y.C.

20-22—American Oil Chemists' Society, annual spring meeting; Roosevelt Hotel, New Orleans.

23-24—Pennsylvania Mfg. Confectioners' Assn., annual production conference; Franklin & Marshall College, Lancaster, Pa.

May

3- 7—American Assn. of Cereal Chemists, annual meeting; Statler Hotel, Washington, D. C.

4- 6—Biscuit & Cracker Mfg's Assn.; Biscuit Bakers Institute, joint annual meeting; Palmer House, Chicago.

10-13—Flavoring Extract Mfrs. Assn., annual meeting; Roosevelt Hotel, New York.

10-14—American Society of Brewing Chemists, Silver Anniversary Convention; Queen Elizabeth Hotel, Montreal.

11-14—Assn. of Operative Millers, annual meeting; Sherman Hotel, Chicago.

13-15—Millers National Federation, annual convention; Edgewater Beach Hotel, Chicago.

17-21—Institute of Food Technologists, annual convention & exhibit; Bellevue-Stratford Hotel, Philadelphia.

HORS D'OEUVRES

▶ **Visual Research finds package designs often misleading. A cake flour is taken for a cake mix, bottled mushrooms for baby food, and a beer for a liqueur. Its either a sneaky way of getting new customers or they're catering to What's My Line fans.**

▶ **Aerosol eggs are suggested as a new product. Touch the button over a hot skillet and you'd have 'em scrambled. Good shampoo, too.**

▶ Safe driving is now called "defensive driving." But there still are those who consider a good offense the best defense.

▶ **Thirty-two percent of poultry is eaten on Sunday, Market Research Corp. reveals. Probably the only day Dad can carve without losing his temper.**

▶ Continental Can has demonstrated the way to better breakfasts through boil-in-bag frozen dishes served in throw-away paper plates and cups. Its boil and bubble, with no toil nor trouble.

▶ **Chemists look ahead to an era in which man will manufacture much of his food from such things as coal and limestone. We hope they keep on looking ahead.**

For more data, circle 250 on Reader Service Card

B.F.Goodrich

Hose takes sardines on a short-cut to the cannery

Problem: Sardine fishermen had to haul those heavy nets over the side by hand and then shovel the fish into the boat. That took time and heavy work, and damaged a lot of fish.

One New England canner looked for a way to get his catch back to the docks faster, and without waste. He wondered if fish could be taken aboard by hose, as petroleum is.

What was done: B.F.Goodrich engineers studied the problem and suggested a flexible suction hose that is light, yet will not collapse. It can be handled easily by one man. Using this hose like a vacuum cleaner, fishermen can suck the sardines aboard in a stream of water at a ton-a-minute clip.

Savings: This B.F.Goodrich hose cuts loading time in half, gets fish to the cannery faster and fresher. Boats are able to make more runs out to sea in a season, get more fish—the fisherman and canner make more profit.

Extra benefits: Because this B.F. Goodrich hose is lined with soft rubber, thin-skinned sardines can go through without becoming bruised. Fish reach the cannery in better condition. There's less spoilage.

Where to buy: Your B.F.Goodrich distributor has exact specifications for the B.F.Goodrich hose described here. And, as a factory-trained specialist in rubber products, he *can* answer your questions about *all* the rubber products B.F.Goodrich makes for industry. *B.F.Goodrich Industrial Products Co., Dept. M-562, Akron 18, Ohio.*

B.F.Goodrich *industrial products*

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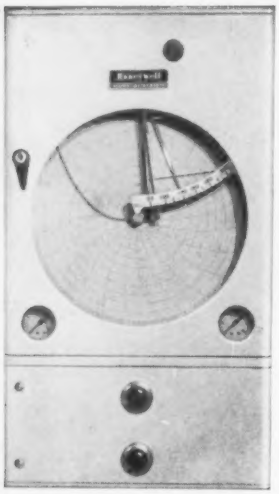
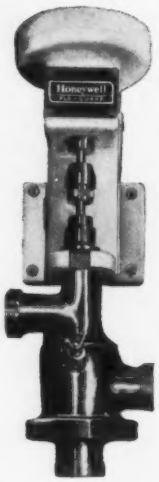
Let Honeywell controls bring you all

HTST PASTEURIZATION CONTROLS



THERMAL LIMIT CONTROLLER records and controls milk temperature to maintain pasteurization requirements. The thermal limit switch, recorder and control unit are compactly combined in one case, reducing panel space requirements, number of working parts and normal maintenance.



FLO-GUARD FLOW DIVERSION VALVE instantly diverts milk for reheating when the measured temperature drops below the required value. It passes milk in the forward flow direction *only* when milk is at or above pasteurization temperature. The valve is of clean, functional, sanitary design.

CLEAN-IN-PLACE CONTROLS

Temperature and timing control packages for automatically cleaning pipelines and process equipment provide:

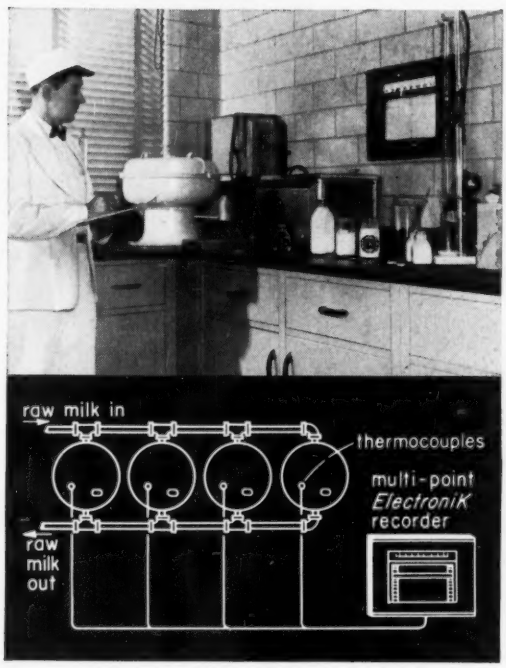
- Record and control of solution temperature.
- Adjustable timing for rinse and wash cycles.
- Adjustable timing for drainage.
- Automatic sequencing of tanks, lines and valves.
- Remote operation and visual indication of process.

CENTRALIZED CONTROL SYSTEMS

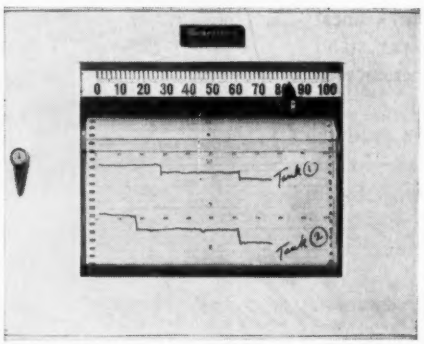
This control console offers the ultimate in automatic, centralized control. From this one location, blending and storage, standardization, and other operations can be sequenced automatically or manually.

the advantages of dairy automation

TEMPERATURE AND LEVEL RECORDING



MULTI-POINT TEMPERATURE RECORDER provides an accurate record of product cooling and storage temperatures at a number of points throughout the plant. This *ElectroniK* recorder uses either thermocouples or resistance bulbs as sensing elements, and records as many as 20 different temperatures on a single chart.



STRIP CHART SINGLE OR MULTI-TANK LEVEL RECORDER provides continuous record of tank fills, discharges, and total quantity. Record can be sequenced for a number of individual tank operations.

Consistently high product quality . . . more efficient plant operation . . . simplified maintenance . . . continuing, day-to-day economies. Gain these and all the other advantages of modern dairy automation with Honeywell instrumentation matched to the exact requirements of your plant.

From the world's largest line of automatic controls, Honeywell custom-designs complete control "packages"—systems to regulate virtually every dairy process, accurately and dependably. In bringing all of your plant operations under precise, centralized automatic control, these systems help you meet the strictest standards of nutrition and sanitation, with push-button ease.

An important extra you get with Honeywell instrumentation is truly complete service . . . in the design and selection of controls . . . during installation and startup . . . in periodic inspection and maintenance. And you can depend on Honeywell for swift help in emergencies. Wherever your plant is located, a Honeywell service engineer is always close by.

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When you buy from STERWIN you get more than the world's finest food ingredients. STERWIN Technically-Trained Representatives stand constantly ready with years of technological and practical experience to help you solve your food production problems.

Over the years STERWIN has helped numerous manufacturers produce better food products more easily and economically. Call on us—let us work together—no obligation of course.

Stop your sanitizing problem with ROCCAL® by Sterwin

Roccal, the original Quaternary Ammonium Germicide, sanitizes as it deodorizes . . . is the complete sanitizer for all industry.

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DEVELOPMENTS TO WATCH

SPECIAL FOOD SERVICE to EXECUTIVES

See Who's Building What p. 17

Washington Report p. 27

Microfilm cooker that spreads thin layer of dissolved sugar on hot surface by centrifugal action for rapid heat transfer is Baker Perkins, Ltd., development. Crystal-clear colorless syrup is produced continuously.

New horizontal-plate pressure filter can be cleaned without opening. Filter cake is blown dry with air, plates are turned to vertical, and vibrator removes cake for screw-conveyor discharge. It is Sparkler unit.

Bread-dough weight is controlled by in-line unit which check-weighs and adds dough. FMC unit is said to eliminate overscaling, which now averages ½ oz.

Batter-mixing time is cut to ⅛ and yield increased 10% by mixing under air pressure in unit brought from Europe. Pressure chamber has built-in beater. It discharges to depositor through plastic hose.

New Hungarian mill cuts ends off grains and slits center part along axis to prepare for simplified grinding. Ends are used as coarse product or feed.

New backwashing water filter operates on dirt cycle rather than time. Differential between in and out line pressures controls Ronningen-Petter unit.

Institutional demand for frozen entrees in plastic pouches may be increased by electronic oven which heats food as it passes through on conveyor.

Caffeine may be extracted from coffee withheld from market in Brazil, for use in beverages and drugs. Hot benzol removes caffeine from flakes.

Moroccan sardine vessel discharges electricity to attract fish and inhibit reflexes while they are caught by suction pump or net.

New water desalting process announced by Department of Interior operates at cost below $1 per 1,000 gal. Long-tube, vertical, multiple-effect distillation unit represents progress toward conversion of sea water for irrigation.

Standard Brands has entered into joint venture with General Milk to produce and distribute milk products in Brazil before mid-'59.

Dairy industry in Northeast now has uniform score-sheet for raw milk. This should eliminate confusion in markets with multiple inspection.

New basic bread food for babies and children up to 6 yr. old will be produced by Ward and franchise bakers and distributed as Gerber's Primary Bread.

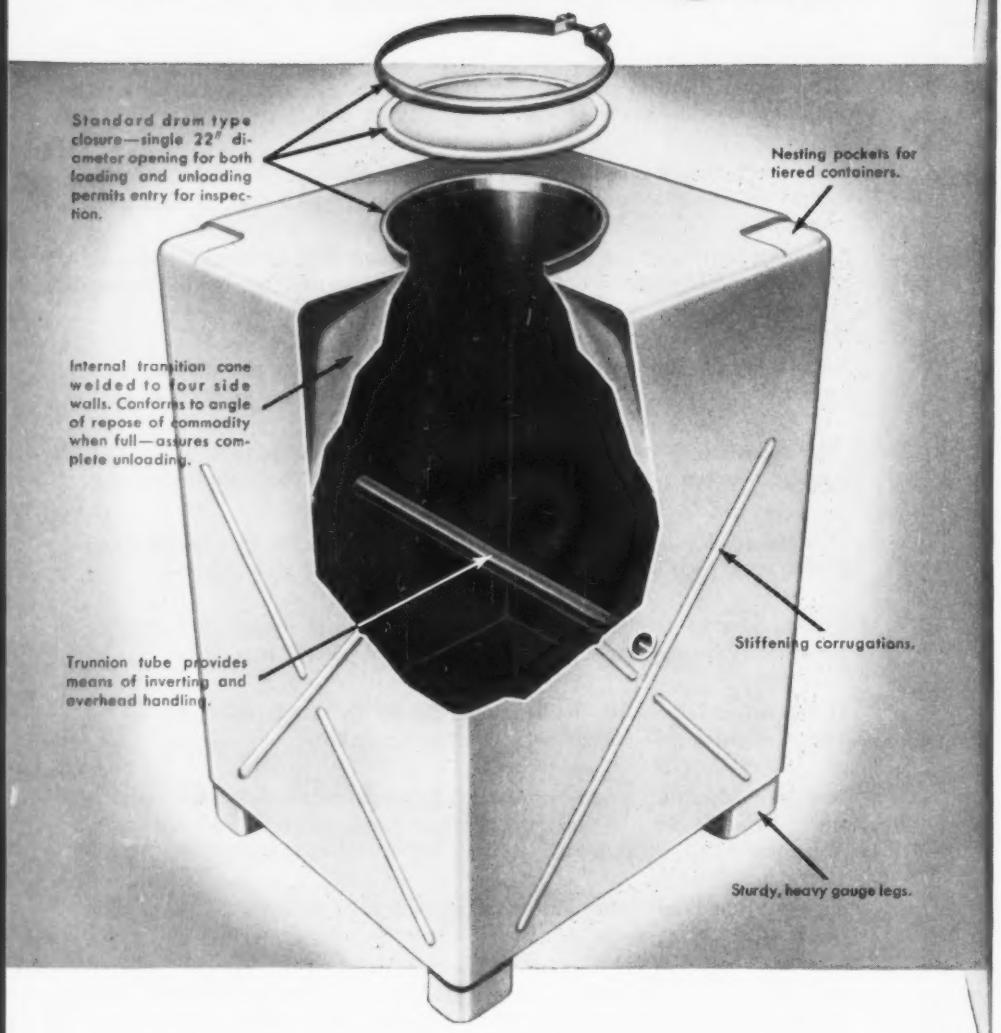
Quartermaster Food & Container Institute announces a new grant of $14,000 to Oregon State College for research on radiation preservation of seafoods.

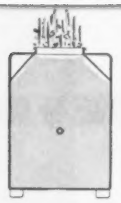
Fourth International Congress on food distribution will be held June 22-26 at Lausanne, Switzerland. International Food Exposition will be held there June 13-28. Delegates from 35 countries will participate.

American technologists will update food men from 17 Latin-American countries at Inter-American Food Congress in Miami Beach June 9-13.

Food protection and additives are topics of MIT symposium, June 22-26.

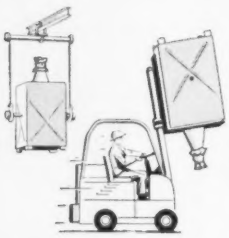
New Powell Invert-a-bin slashes bulk handling costs


Standard drum type closure—single 22" diameter opening for both loading and unloading permits entry for inspection.
Nesting pockets for tiered containers.
Internal transition cone welded to four side walls. Conforms to angle of repose of commodity when full—assures complete unloading.
Trunnion tube provides means of inverting and overhead handling.
Stiffening corrugations.
Sturdy, heavy gauge legs.

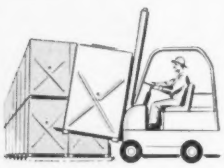


Fills Fast—22" opening permits fast filling of even powdered materials. Internal cone conforms to angle of repose.

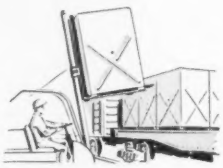
Empties Clean — Internal cone funnels all materials out of bin. No residue remaining.



Used Anywhere—Standard handling equipment—no fancy unloading devices needed at every use area.



Stores Outdoors—Weatherproof, turns yard area into warehouse. Stacks 2 high.



Cuts Shipping Costs — low cost flat-bed equipment considered part of special rail car with "freight free" advantages.

For bulk handling dry granular or powdered materials—sugar—flour—plastics—chemicals—cement—etc.—in plant or between plants, the new patented Powell Invert-A-Bin made of steel or aluminum is the simplest, most versatile container ever developed.

Easily filled, easily inverted, quickly emptied, the Invert-A-Bin can be used anywhere without special devices at each use point. It stores safely outside, lets you take advantage of many transportation economies. Invert-A-Bins eliminate the use of disposable packages and bring you all the advantages of a bulk handling system without the costly investment. Get all the facts—write today for your copy of the Invert-A-Bin, Semi-bulk handling brochure.

POWELL PRESSED STEEL Since 1920 HUBBARD, OHIO

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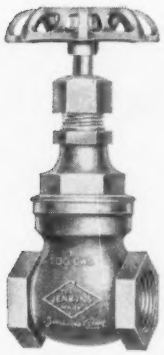


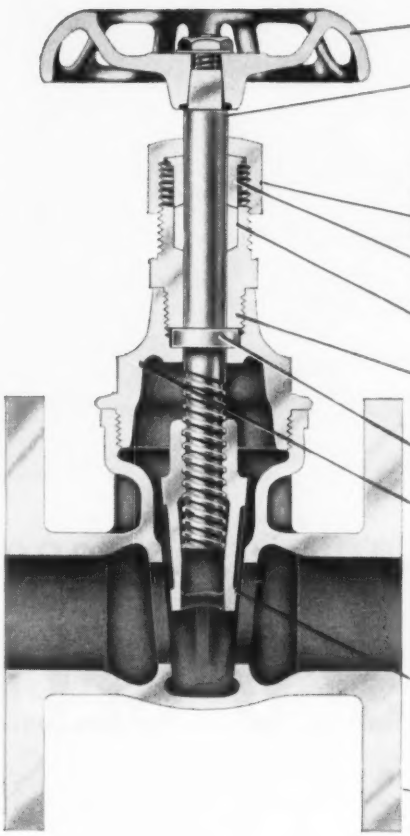
This dollar-saving **Solid Wedge Gate** shows it pays to

Specify JENKINS for STAINLESS STEEL Valves, too

BECAUSE Jenkins puts an extra-measure of quality in this Fig. 1300 Solid Wedge, Inside Screw Gate Valve you will find it satisfies the needs of many services for which a more costly type often would be used. Look at the many superiorities in design and construction shown here. You'll conclude that it's hard to beat Jenkins at making valves, no matter what the material.

But no picture can show the quality of the castings . . . the precision machining . . . the rigid inspection and testing that have gone into this valve. All of these are as important as design and metal alloys in assuring long, dependable, economical valve service. And, all of them are up to the peak standards for which Jenkins has been known for almost a century.

SEND FOR NEW CATALOG of Jenkins Stainless Steel Valves, in patterns and alloys that satisfy the requirements of practically all corrosive services. These Jenkins Valves meet valve industry specifications and the high standards established by leading users of stainless steel valves.



WHEEL of high strength malleable iron, designed for firm, cool grip and easy operation.

SPINDLE of large diameter and dense structure has high resistance to wear and torsion strains. The threads precisely machined to correct pitch and lead assure tightness, ease of operation and resistance to shearing stresses.

PACKING NUT is strong and deep for full thread engagement.

PACKING GLAND is a self-centering design to afford tightness without excessive friction on spindle.

PACKING — A Teflon ring in a large capacity box requires less frequent replacement.

PACKING BOX NIPPLE assumes thrust when closing valve. It is extra heavy, with hex flats larger than diameter of bonnet face to prevent leakage.

SPINDLE COLLAR, integral with spindle, is large and wide to resist thrust and shearing strains.

BONNET is a rugged unit, with accurately machined threads to assure tight joints with the body and packing box nipple. Top of wedge and corresponding face inside of bonnet are machined to insure perfect spindle alignment and backseating for repacking valve under pressure.

SOLID WEDGE is tapered equally on both faces. Lugs on sides of wedge engage guide ribs in body to reduce drag and minimize chatter.

BODY has best combination of wall thickness and shell design to withstand pipeline stresses. An integral seat minimizes corrosive attacks.

JENKINS
LOOK FOR THE JENKINS DIAMOND
VALVES

Sold Through Leading Distributors Everywhere

JENKINS BROS., 100 Park Avenue, New York 17, N. Y.

☐ Send the new stainless steel valve catalog

☐ Have a representative call on me

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Picture of a packaging machine operator using AVISCO® CELLOPHANE

■ *It's just about that easy!* For nothing matches the smooth, trouble-free performance of cellophane on high-speed packaging machines. First of all, it has crispness, body and rigidity—won't droop or collapse like other films. Second, it's static-free. Third, it heat seals easier, faster and more securely than any other packaging material. But that's not all. Cellophane prints exquisitely. And its true transparency and sparkle create greater sales appeal for any product. Remember, too, cellophane seals in freshness and protects products from dust and handling. Add all these advantages to the low initial cost of AVISCO cellophane and you'll find it's a bigger dollar value than any other packaging film. We offer a complete service to assist you and demonstrate how AVISCO cellophane, plain or printed, will answer your requirements better than any other packaging material. Phone or write us for an appointment with our representative or a selected cellophane converter specializing in your field.

AVISCO

AMERICAN VISCOSE CORPORATION, FILM DIVISION, 1617 PENNSYLVANIA BLVD., PHILADELPHIA 3, PA.

WHO'S BUILDING WHAT...

Monthly Report: Food firms to spend $17,977,455 for expansion

Proposed Work

Austex Foods Inc., Austin, Tex., 40,000 sq. ft. manufacturing plant, to cost $200,000.

City Market Authority, Baltimore, produce market, cost: $1,500,000.

D. X. Murphy & Bros., Louisville, Ky., milk processing plant to cost $1,000,000.

Engelhorn Packing Co., Philadelphia, meat plant additions and alterations, $150,000.

Friendly Ice Cream Corp., Springfield, Mass., ice cream manufacturing plant and warehouse, to cost $1,000,000.

General Mills, Minneapolis, flour mill, $1,100,000.

H. E. Butt Grocery Co., San Antonio, produce and frozen food warehouse, to cost $1,000,000.

Hunt Foods & Industries, Los Angeles, 1-story warehouse and processing plant, $500,000.

King Soopers, Denver, 22,000 sq. ft. pastry bakery and office, $110,000.

Meyer Packing Co., Sioux City, Iowa, 1-story meat packing plant, $150,000.

Milk Power Inc., Dalton, O., milk factory, cost: $350,000.

National Biscuit Co., Houston, bulk flour handling facility, to cost $215,000.

National Dairy Products (Sealtest Foods Div.), Denver, 2-story dairy processing plant, $1,000,000; New Haven, Conn., ice cream plant addition, $250,000.

Pillsbury Mills, Inc., Denison, Tex., plant, $2,000,000.

Richter's Bakery, Victoria, Tex., bakery on 3.6 acre site, cost: $750,000.

U. S. Engineering, Fort Sheridan, Ill., cold storage warehouse about 9,300 sq. ft., $230,000.

Contracts Awarded

Ambrosia Brewing Co., Chicago, 1-story warehouse, $190,000.

Neptune "Meter with a Memory" never forgets the formula

Why waste a good man's time counting buckets, remembering formulas, waiting for liquids to creep up to gauge marks, repeatedly running the risk of counting or reading errors?

Let the precise "mechanical memory" of this Neptune repeating Auto-Stop meter do the work. Set the quantity required by the formula just once. Open the valve. The meter does the rest... shuts off automatically at the exact amount. Even prints a batch ticket if you want. The meter "remembers"...delivers the same amount each time the valve is opened until reset for a different quantity.

A meter helps a good operator produce more, with consistently better quality, less back-breaking work, and better housekeeping. Investigate this cost-saving meter today. Our field engineers will be glad to help.

GET THE FACTS
Ask for helpful Meter Data Bulletin 566 YF See Neptune Data Pages in Chemical Engineering Catalog.

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For more data, circle 257 on Reader Service Card

DAY

Pneumatic Conveying & Bulk Storage News

FROM *Feathers* TO STEEL CHIPS

no job is too delicate or too tough
for DAY Air-line Conveying Systems

DAY *air-line* pneumatic conveying systems can handle hundreds of different products, efficiently and economically. That's why you find DAY equipment in a bedding plant conveying feathers . . . and in a machine shop moving steel chips. These totally different DAY air-line systems demonstrate the versatility and ability of DAY equipment to best serve your pneumatic conveying needs.

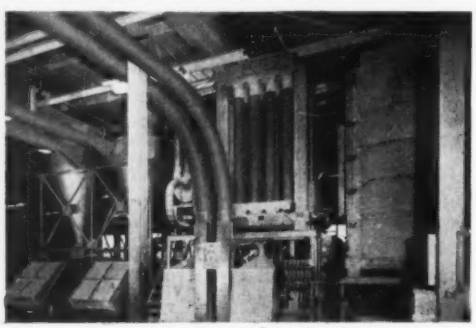
Only DAY gives you all types of equipment and services

DAY not only provides high density (so called "fluidizing") systems and low density conveying systems but also can supply all types of accessory equipment including the finest bulk storage tanks. This undivided responsibility is your guarantee of efficient, proven, dependable equipment that's right for your plant!

Vertical Bulk Storage Tanks

Horizontal Bulk Storage Tanks

Photo (below) shows DAY air-line pneumatic system which combines product drying and cooling with conveying. This system has been in successful operation for over 6 years.



Because no one type of conveying system fits all jobs it will pay you to study DAY BULLETIN M-588. It tells how to improve plant efficiency 6 ways and make substantial savings 9 ways with modern DAY *air-line* conveying systems. Write toDAY for free copy — BULLETIN M-588.

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Representatives in Principal Cities

EQUIPMENT ONLY OR A COMPLETE SYSTEM

Borden's Dairy Co., Tampa, milk and ice cream plant, to cost $2,000,000.

Buffalo Milk Producers Cooperative, Buffalo, N. Y., 31,000 sq. ft. milk processing and bottling plant, $500,000.

Campbell Soup Co., Camden, N. J., plant additions and alterations, over $500,000.

Colonial Baking Co., Hopkinsville, Ky., 1-story bakery and office, to cost $225,000.

Dirr's Gold Seal Meats, Miami, 2-story meat packing plant addition, $133,000.

Dole Hawaiian Pineapple Co., Oakland, Calif., central distribution warehouse to cost $270,000.

Farmers and Consumers Dairy, Morristown, N. J., bottling plant addition, to cost $150,000.

Farm Fresh Packing Corp., Hightstown, N. J., refrigerated storage building, $200,000.

Foremost Dairies, Inc., Corpus Christi, Tex., dairy processing and storage plant, $190,000.

Food Fair Stores, Inc., Philadelphia, air conditioned seafood warehouse, $300,000.

Grocer's Baking Co., Johnson City, Tenn., bakery, to cost $150,000.

Lone Star Packing Co., Houston, meat packing plant, to cost $375,000.

P. Francini & Co., Naugatuck, Conn., ice cream and dairy plant, $120,000.

Penn Fruit Co., warehouse, $500,000.

Reliable Packing Co., Chicago, 3-story meat packing plant repairs, $250,000.

Superior Dairies, Minneapolis, creamery addition, alterations, to cost $177,000.

Underwoods, Inc., Lubbock, Tex., 1-story frozen food processing plant, to cost $112,455.

William Davies Co., Chicago, 3-story meat packing plant addition, $130,000.

Other Developments

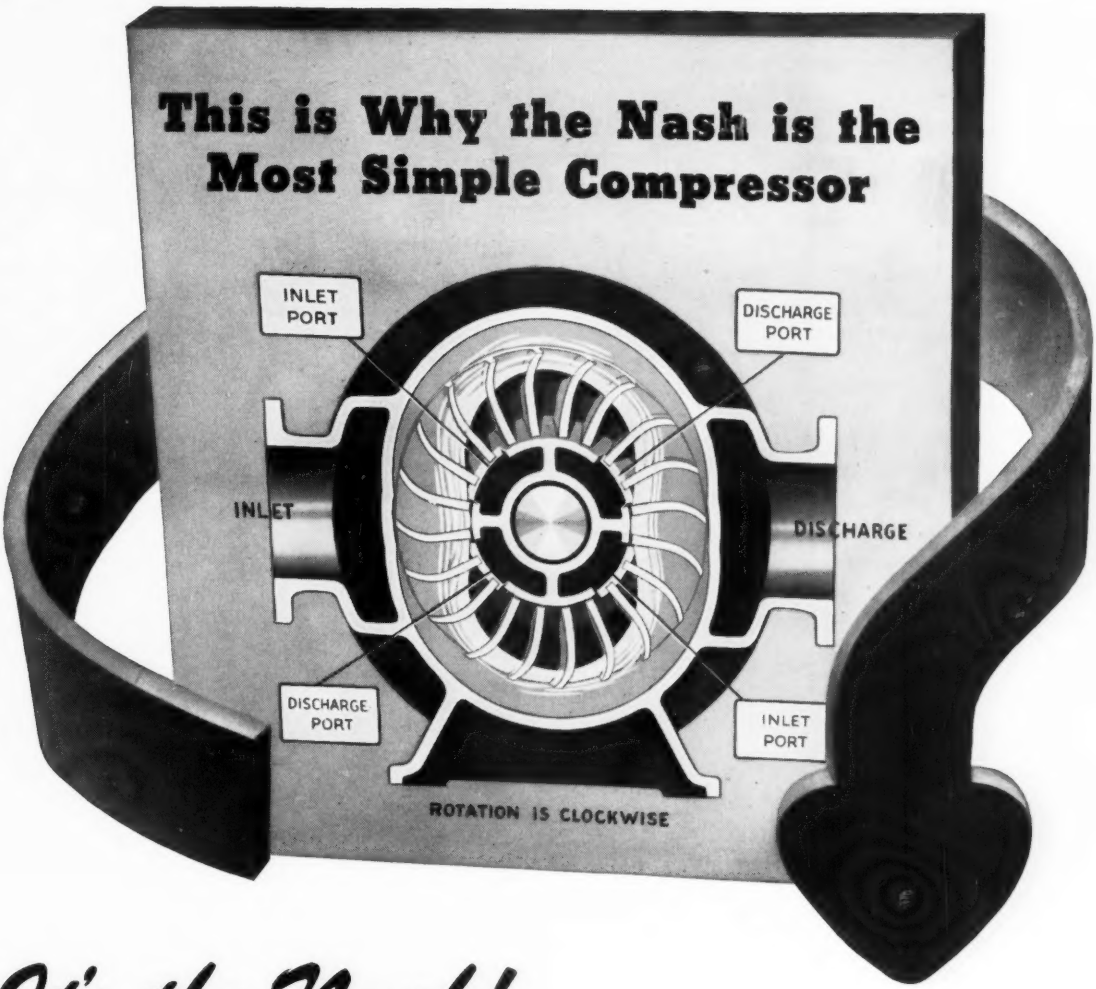
Colonial Baking Co. announced completion of its $2,500,000 expansion program, doubling its capacity.

General Mills soon begins construction of its new milling facility in Buffalo, N. Y.

Imperial Sugar Co.'s new melt house will be completed this year.

Liberty Fish Co.'s frozen seafood warehouse and office facility, in Philadelphia's $100,000,000 Food Distribution Center, is now under construction.

This is Why the Nash is the Most Simple Compressor



It's the Nash!

There are no mechanical complications in a Nash Compressor. A single moving element, a round rotor, with shrouded blades, forming a series of buckets, revolves freely in an elliptical casing containing any low viscosity liquid. This liquid, carried with the rotor, follows the elliptical contour of the casing.

The moving liquid therefore recedes from the rotor buckets at the wide part of the ellipse, permitting the buckets to fill with gas from the stationary Inlet Ports. As the casing narrows, the liquid is forced back into the rotor buckets, compressing the gas, and delivering it through the fixed Outlet Ports.

Nash Compressors produce 75 lbs pressure in a single stage, with capacities to 6 million cu. ft. per day in a single structure. Since compression is secured by an entirely different principle, gas pumping problems difficult with ordinary pumps are often handled easily in a Nash.

Nash simplicity means low maintenance cost, with original pump performance constant over long periods Data on these pumps sent immediately on request

No internal wearing parts.

No valves, pistons, or vanes.

No internal lubrication.

Low maintenance cost.

Saves floor space.

Desired delivery temperature automatically maintained.

Slugs of liquid entering pump will do no harm.

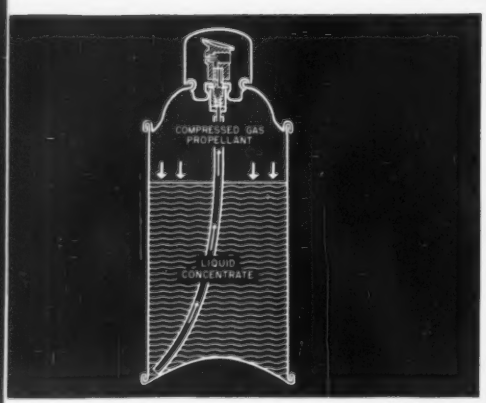
75 pounds in a single stage.

NASH ENGINEERING COMPANY

313 WILSON, SO. NORWALK, CONN.

AIRCO INDUSTRIAL AND RARE GASES

ARGON
OXYGEN
ACETYLENE
NITROGEN
NITROUS OXIDE
HYDROGEN
CARBON DIOXIDE
HELIUM
XENON
KRYPTON
NEON



THE ANATOMY of a typical aerosol involves (1) a gastight steel, aluminum, clad-glass or plastic container; (2) a manually-operated valve, usually with a dip tube; and (3) a propellant under pressure to force the product up and through tube and valve.

PART OF THE PICTURE
at ATI as aerosol production soars—
AIRCO INDUSTRIAL GAS SERVICE

In the very near future, a billion aerosol units a year will be marching off the conveyor belts of custom and in-plant loaders. Well over 100 different products, under hundreds of brand names, are being dispensed by push button.

The most suitable and economical propellants for a substantial percentage of aerosols are the compressed gases—notably true for the host of pressurized foods and pharmaceuticals now under development.

Airco has been in the forefront of this booming business. With technical help, with supplies of high purity compressed gases—

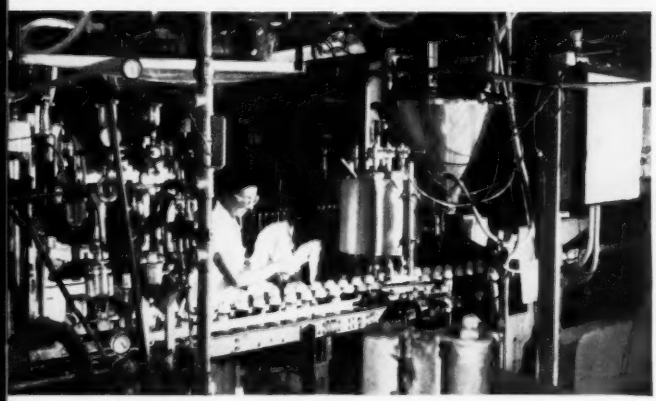
NITROUS OXIDE—CARBON DIOXIDE
and now
NITROGEN—ARGON

Airco also has pioneered the use of these gases in other areas of equal importance to—and often related to—packaging, blanketing, purging, quick freezing, chilling, hydrogenation, and carbonation.

If your plans include products in pressure packages—or product improvements of any kind where gases can serve—call in your nearby Airco Engineering Service Representative. Airco offers you unexcelled technical facilities for adapting your products to compressed gases, plus a source of supply widely known for its dependability.

AMONG THE BUSIEST of the custom loaders is Aerosol Techniques, Inc., at Bridgeport, Conn. Production processes, originally worked out with Airco, now enable ATI to handle up to 400,000 units a day. Here's how ATI cycles a compressed gas aerosol:

Prewashed cans travel on a magnetic conveyor like the one below. A six-spout filler charges cans with product. Operators insert the valves. Machine crimping comes next. Cans then move to the gassing heads.



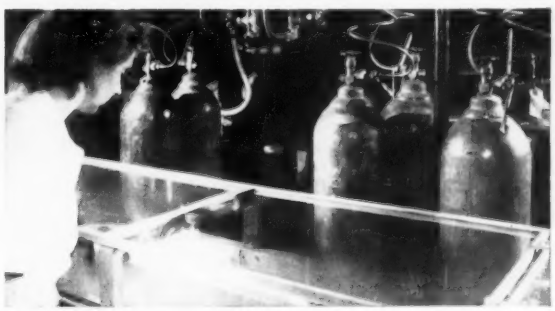
GASSING HEADS charge cans with Airco high purity nitrogen, down through valve and dip tube, to a pressure of 50-100 psig., depending upon formulation. This is the pressurized gas that ultimately dispenses the product.

Electronic equipment then checks units to make sure each is gas-tight and pressure-right. Cycle time, which often includes labeling: about two minutes.

RESEARCH AND DEVELOPMENT LABS of ATI, where Airco's long experience with industrial gases and gas equipment serves ATI in its enlarged program to develop new inhalation therapy aerosols, pressurized vitamins, antibiotics and other products.

THE NITROGEN INSTALLATION. Here, too, Airco is part of the picture. For Airco has tailored this installation to ATI needs, backed it up with stand-by cylinders and the Airco Dealer's nitrogen "bank" of more than 100 cylinders.

Why Airco? Because Airco is near at hand, supply is certain, and competent technical personnel is on call at all times.



AIRCO

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Offices and dealers in most principal cities • On the west coast—Air Reduction Pacific Company • Internationally—Airco Company International • In Cuba—Cuban Air Products Corporation • In Canada—Air Reduction Canada Limited • All divisions or subsidiaries of Air Reduction Company, Inc.

AT THE FRONTIERS OF PROGRESS YOU'LL FIND AN AIR REDUCTION PRODUCT • Products of the divisions of Air Reduction Company, Incorporated, include: **AIRCO**—industrial gases, welding and cutting equipment • **AIRCO CHEMICAL**—vinyl acetate monomer, vinyl stearate, methyl butynol, methyl pentynol, and other acetylenic chemicals • **PURECO**—carbon dioxide—gaseous, welding grade CO_2, liquid, solid ("DRY ICE") • **OHIO**—medical gases and hospital equipment • **NATIONAL CARBIDE**—pipeline acetylene and calcium carbide • **COLTON**—polyvinyl acetate, alcohols, and other synthetic resins.

What exactly do we mean...

"THE COMPLETE MAGAZINE FOR THE WHOLE MAN?"

We'll let "the man", himself, answer. Listen to A. D. Redmond, General Manager of Pet Dairy Products Co., Knoxville plant:

"We had a *marketing* problem . . . rough competition on ice cream sales, and a real fight on our hands for lost freezer space in supermarkets. We had a *packaging* problem . . . we simply had to get more eye-appeal, but we had to have container strength, too. Ice cream packages take a beating. If yours leaks, you're in trouble. We had a *manufacturing* problem . . . could we gear up the plant to take care of the new packaging setup profitably?"

Three different sides to one big problem — and Pet licked it by switching to a molded plastic container made by Plastic Container Corp. from Monsanto stock. (That's Mr. Redmond at the right dressed for the Klondike, and holding the new package.) And he tells us..."*Sales shot up 69% in the first 3 months after we made the decision.*"

One-man decision? No! . . . a typical management decision. Plant, technical, sales, advertising, purchasing men all sat down with Mr. Redmond with an over-powering common interest... *profits.*

A. D. Redmond, and his associates, read Food Engineering because it is the complete magazine for the *whole* man . . . the only food publication for better management in manufacturing, packaging and marketing. Incidentally, Monsanto Chemical, who has so ably promoted the use of plastic containers, is a current Food Engineering advertiser.

For Better Management in Manufacturing, Packaging, Marketing

FOOD ENGINEERING

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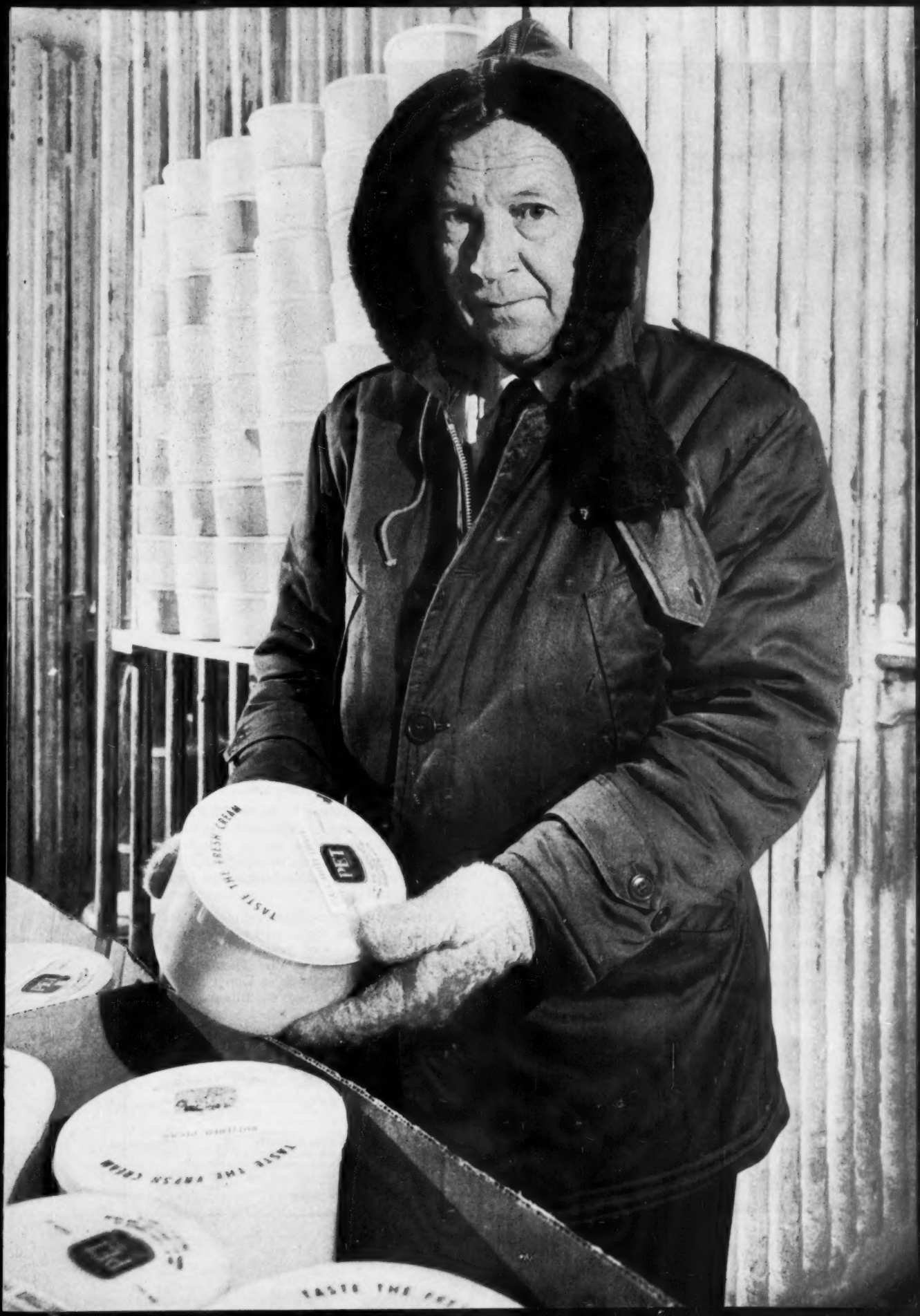

TASTE THE FRESH CREAM
PET

What can you learn from a Quaker cereal sample?

You'll see a finished product of the highest quality in any one of the standard cereal products listed below, or from products tailored to your own specific requirements. But this is only half of the story, because doing business with Quaker offers many other hidden advantages:

1. The quality in a Quaker cereal sample is not just for "sampling" purposes. It represents standard mill run, and Quaker's outstanding quality control means that sack after sack, or carload after carload, you can always depend on the same conformity to specified standards.

2. Quaker can sample you in all varieties of grains—because Quaker mills all types. And for this same reason Quaker is in an exceptionally good position to give you helpful and unbiased advice on the types and grades of milled products for your particular needs.

3. Quaker's milling is backed by the finest technical research in the newest and most modern laboratory in the milling industry. Here Quaker customers can benefit from the application of the latest techniques to their own specific problems.

Whatever your processing problem, it will pay you to get better acquainted with Quaker products. For samples of cereals in which you are interested, write or phone The Quaker Oats Company, Industrial Sales Department, Merchandise Mart, Chicago 54, Illinois.

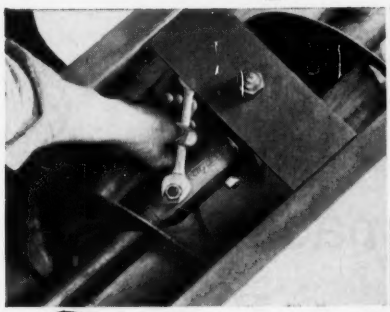
QUAKER

Quaker Standard Dry Milled Items

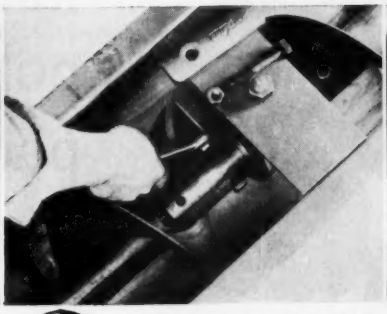
- **Oat Products**
  OATMEALS.....6 sieve sizes
  ROLLED OATS.....11 flake sizes
  OAT FLOURS.....8 types
- **Wheat Products**
  INDUSTRIAL FLOURS
  FARINA
- **Pre-Mixing Services**
  AVAILABLE (to your specs)
- **Rice Products**
  FLOURS
- **Barley Products**
  PEARLED BARLEY..7 sieve sizes
  BARLEY FLOURS (including one in which the enzymes have been inactivated)
- **Corn Products**
  (all electrostatically cleaned—then water washed before milling)
  MEALS.....White & Yellow
  GRITS.....White & Yellow
  FLOURS.....White & Yellow

For more data, circle 261 on Reader Service Card

First time you've ever seen a conveyor screw changed so fast!

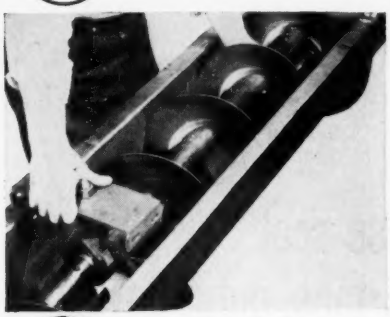


First, take out coupling bolts and filler piece from right-hand end of section to be removed.



Second step: take out coupling bolts and filler piece from the preceding section.

Rotate screw being removed 180 degrees so slot on preceding section is up. Then unbolt hanger.



Now simply lift the conveyor section from the trough and assemble the new one in its place.

RUNNING AGAIN. After less than 30 minutes, the conveyor is back at work.

LINK-BELT Quik-Link conveyor screw eliminates need to pull down entire conveyor line

Down-time is held to the barest minimum with the Quik-Link conveyor screw. It speeds and simplifies the maintenance man's job . . . other components need not be dismantled. And Quik-Link is just one of a whole group of new Link-Belt screw conveyor components that are cutting maintenance and power demands to a new low.

- *BALL BEARING HANGER*—has self-aligning bearing and seal, adjusts to deflection.
- *BALL AND ROLLER BEARING COUNTERSHAFT END*—connects two conveyors at right angles, permits use of a right-angle drive.
- *TROUGH END SEAL*—keeps grease in, dirt out. Used with lip, felt or waste packing seal to prevent bearing-product contact.
- *DOUBLE BALL BEARING FLANGE BLOCK*—resists overhung loads at drive end and takes thrust loads of screw.

For complete facts, call your nearest Link-Belt office or authorized stock-carrying distributor. Or write for Folder 2489.

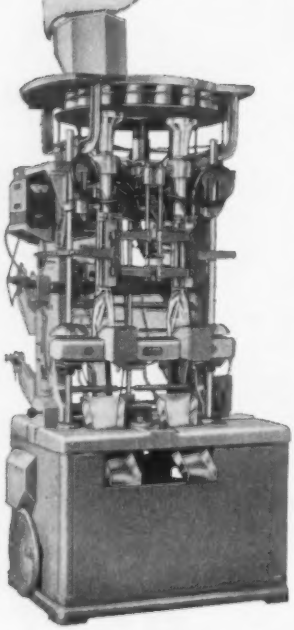
LINK-BELT

SCREW CONVEYORS

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office, New York 7; Australia, Marrickville (Sydney); Brazil, Sao Paulo; Canada, Scarboro (Toronto 13); South Africa, Springs. Representatives Throughout the World. 14,883

this polyethylene package is made with 15% LESS film!

STOKESWRAP "impulse seal" eliminates tabs, cuts film costs



Every seventh package at no cost! That, in effect, is what Pioneer Growers Cooperative of Belle Glade, Florida, has achieved with STOKESWRAP "impulse sealing" to package its famous brand of radishes.

With conventional sealing methods, each package required an additional inch of film in the form of tabs or ears. With STOKESWRAP impulse sealing, however, the package is cut off at the seal, eliminating the tabs and saving up to 15% in film length required. Electric eye control assures positive registration of the printed web. Positive sealing and cutoff are completed quickly in one automatic operation at high speed. The web is held in constant tension with no reversing, for smooth trouble-free operation.

"Due to the nature of this sealing and cut-off device, we can safely say we are saving nearly 15% in film," reports Mr. F. C. Dooley of Pioneer Growers.

Made from 1.25 mil polyethylene web 11⅛" wide, the 8-ounce package above measures 5¼" x 7¾". Elimination of conventional ears saves 1-inch of film length per package. STOKESWRAP with its wide selection of feeds – pocket, auger, tablet counting, net-weight scale and special mechanisms – is ideally suited to polyethylene packaging a great variety of products.

For complete details on how "impulse sealing" can cut your packaging costs, write to:

Putting Ideas to Work

FOOD MACHINERY AND CHEMICAL CORPORATION

FMC Packaging Machinery Division

Stokes & Smith Plant

4914 SUMMERDALE AVENUE, PHILADELPHIA 24, PA.

For more data, circle 263 on Reader Service Card

FDA Stern on Additive-Safety Ratio

With key comments still flowing in, FDA delayed finalizing of its Food Additive Amendment regulations. So the "last word" wasn't available at presstime.

It seemed certain, however, that FDA would insist on the 100-to-1 safety factor in additive tolerances, even though it had appeared earlier that there might be some easement on this sore point.

It will look very strict on the books. But some Agency discretion is expected, and only experience will tell how fixed the 100-1 ratio will be.

How 'Transition' the Food Colors

Parallel issue has been new food-color legislation, where similar safety tolerances are sought.

Problem is how to handle present colorings during the testing and certifying period. Since HEW Sec. Fleming is dead set against "grandfather clause" exemption of established hues, there'll be need for some kind of "transition" ruling.

Rules Pillsbury Must Drop Mix Firms

Pillsbury may finally feel the merger-law sting—considering the newest development in the celebrated case started against the miller in '52.

FTC Examiner E. Haycraft has now ruled that Pillsbury violated the Clayton Anti-Trust Act in acquiring ('51 and '52) two competitors—Ballard & Ballard Co. and Duff's Baking Mix Div. of American Home Foods.

Both the full Commisison and, ultimately, the Federal Courts must approve the order requiring Pillsbury to completely divest itself of both acquired properties.

Actually, it sold certain Duff assets in '53. But, says Haycraft, only a full cleaning of the slate removes the violation. Holding its moves to have been proper with no lessening of the competition, the milling company announced it will appeal.

In the wake of recent Justice Department successes under the same law the anti-trusters will press hard on pending cases and file a number of new ones. Prominent cases continuing on the books include: National Dairy Products, Continental Can, Owens-Illinois Glass.

Food Called 'Ray Safe'; Push Studies

Gaged by current rough standards, average persons wouldn't take in unsafe amounts of radiation even in a lifetime of eating, reports HEW Sec. Flemming.

But, he warns, since rough standards aren't good enough, there's need for a "great deal more" research on radiation in foods and amounts humans actually absorb.

So a solid boost in radiation-research funds is called for in HEW's 1960 budget—$1.4 million being sought in addition to the $2 million being spent through health institutes.

The UN Scientific Committee on the Effects of Atomic Radiation has held that Strontium-90 is a human hazard "even in the smallest doses." HEW, however, relies on word of the National Committee on Radiation Protection & Measurement, which says Sr-90 could run 80 mmc. per liter in all items of diet for a lifetime "without exceeding tolerance."

No food has yet given an over-limit reading by this measure. Average yearly concentration in milk, an item in specific question, was gaged as 11.4 mmc. in a typical sampling in St. Louis.

'Ade Is First in Frozen Standards

Concentrated lemonade is the initial major frozen product for which FDA is prescribing standards.

FDA's figuring is that the frozens are finally becoming fairly stable, and accordingly should now meet standards, such as applied for years to other foods.

For one thing, chemical preservatives appear "out" for the lemonade, attitude being that unless a strong need for them is demonstrated they won't be allowed—even though harmless.

The proposed standards specify a beverage of at least 10.5% soluble solids and 0.7% acid. Inclusion of a proportion of unconcentrated lemon juice won't be required. Californians had favored this, Floridians opposed it. FDA cited tests: No distinguishable taste difference between 'ades made from straight concentrate and those prepared from concentrate plus 20% unconcentrated juice.

BRIEFS

Foreign small candies, too (not just small cars) flow faster into the U.S. But Bill H.R. 5616 would bring these in-movements of confections more parallel with our own out-movements. Next time some country 'quotas' our candy, we'd 'quota' theirs.

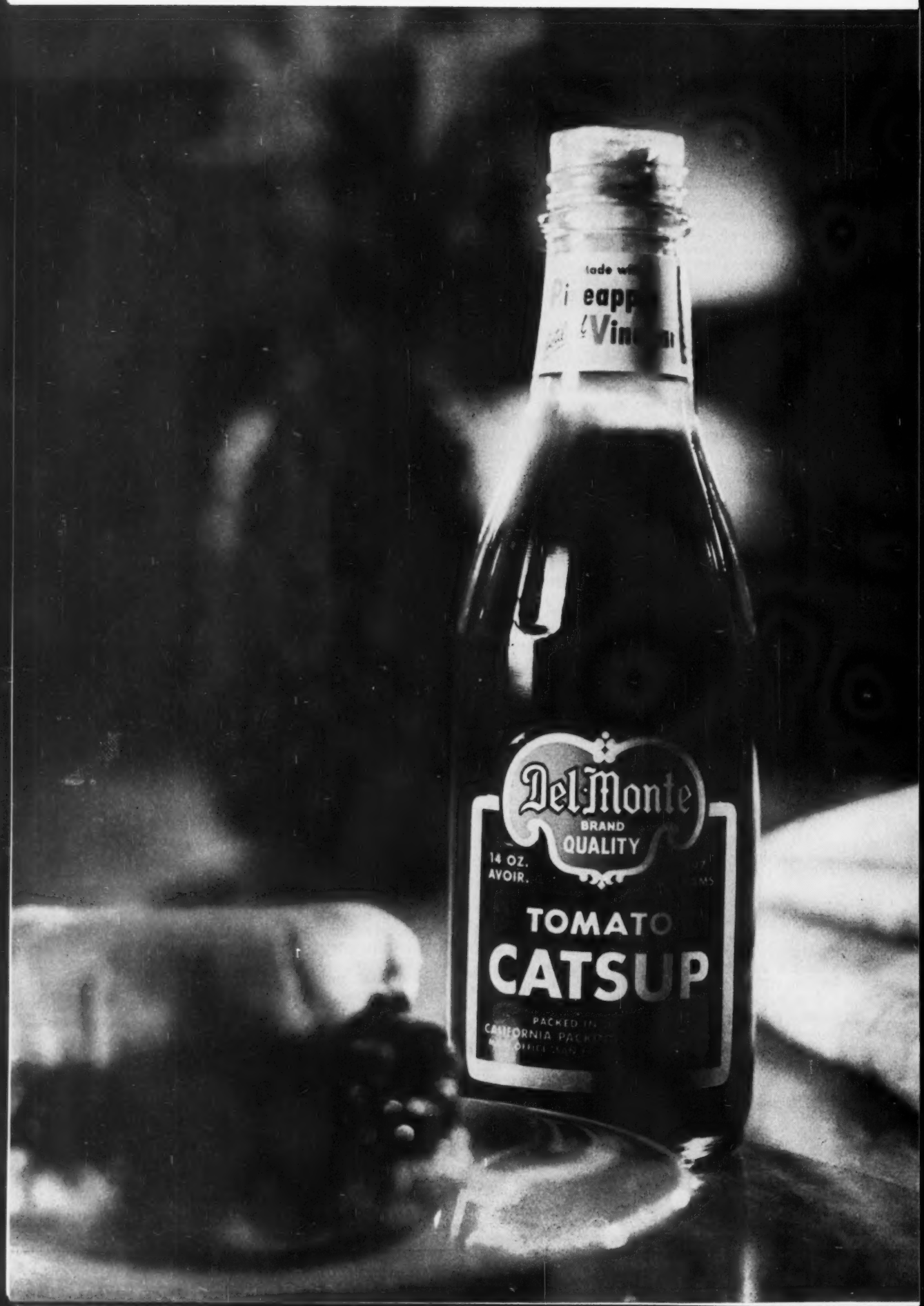
That space-feeding question has caught the eye of the House—it's science committee having called on USDA to hit the problem. Says Rep. Fulton (R., Pa.): "You must have space food when you have a manned space vehicle." Q.E.D.!

For survival foods after an A-raid, we'd need very dependable supplies of containers. So Business & Defense Services Administration is now checking manufacturers relative to their "emergency capacity."

Your story gets over to Congressmen most effectively when the presentation is a really practical job. Hailed here is AMI's recent individualized reports showing each Congressman just how big meat operations are in his state and pointing up how much they influence the state's economy.

Labor costs in food transportation are targets for a USDA study. The need is accented by the Department's advisory body, which finds hauling charges now run 12% of the total food marketing bill. Role of ICC-exempt carriers would get specific checking.

No boosting of the minimum wage is in sight at this time. The Labor Secretary himself opposes it. And extension of the current $1/hr. law to cover agricultural and seasonal workers isn't seen 'coming off' either.


Del Monte
BRAND
QUALITY
14 OZ.
AVOIR.
TOMATO
CATSUP

Profitable Brands Start With Cherry-Burrell

Smooth. Even textured. Pours easy, too. On meats from steak to hot dogs, Del Monte Tomato Catsup is the flavor favorite of families throughout the country.

Pineapple distilled vinegar makes tomato flavor come alive in Del Monte Catsup – every bottle, every time. Cherry-Burrell Superhomo homogenizers are used to insure this flavor uniformity – smooth, even texture, too.

Superhomo homogenizers do the job so thoroughly there's no chance of liquid separation back to a pre-homogenized state. High-speed shearing action of homogenizing valve reduces pectin particles to equal size. Disperses particles, as well as flavoring oils and other ingredients, evenly throughout the product.

In-plant profit, too. Hydraulic sealing for maximum wear. Pressure inside of cylinder block takes over during operation. Completely seals all gaskets. Gives longer gasket and plunger life. Low operating pressures cut down peak load demands, reduce wear on moving parts.

Another Cherry-Burrell product used extensively in the food industry is the Thermutator heat exchanger. Specially designed for use on heavy-bodied products, it heats to 350°F., cools to −50°F. without burn-on or freeze-on.

A Cherry-Burrell Sales Engineer will be glad to show you how these and other Cherry-Burrell products can help solve your processing problem. Call today. There's no obligation.

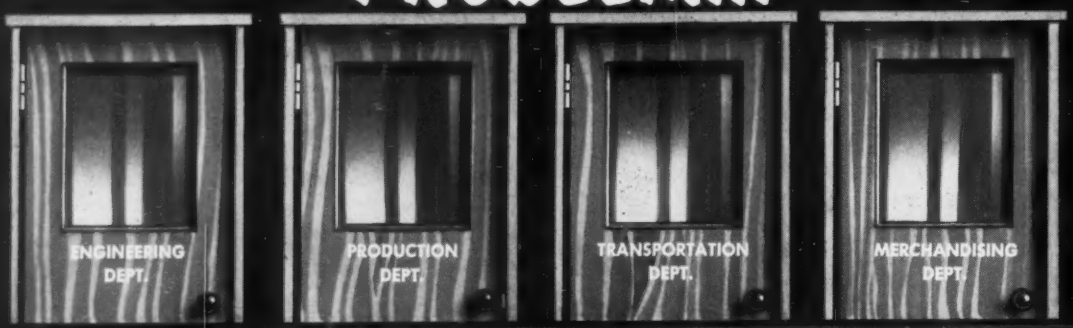
Sales and Service in 58 cities

CHERRY-BURRELL
CORPORATION
CEDAR RAPIDS, IOWA

Food • Dairy • Farm • Brewing • Beverage • Chemical • Equipment and Supplies

For more data, circle 264 on Reader Service Card

PRODUCT HANDLING IS THEIR PROBLEM...



and NESTAWAY has the ANSWER

. . . A SYSTEM FOR HANDLING BAKED GOODS FROM WRAPPER TO CONSUMER

ENGINEERING: The Nestaway System meets every requirement of bakery engineers for efficiency, economy, durability, and sanitation. It is an "engineered" system comprised of wire racks, rack shelves, and caster bases, which combine to form an integral unit complete for moving baked goods every step of the way from the wrapper to the consumer. When empty, the entire system nests to save over 75% in valuable floor space in the bakery. All parts are made of welded steel wire, with a copper-nickel hard chrome finish, assuring long life and easy cleaning. Complete visual control and accessibility is available through every step of your operation. Actual case histories prove the Nestaway System can be used indefinitely with a minimum of replacements. Cost figures show that carton costs alone will usually pay for the entire Nestaway System in two years.

PRODUCTION: Production problems are simplified with Nestaway, the only system versatile enough to handle all your products—even unwrapped baked goods. Racks are filled at the wrapper and stacked one upon another on caster bases. The ease with which the racks can be nested and unnested allows them to be used with the fastest automatic wrapping equipment. Interlocking features of the racks when stacked make it possible for one man to move three tiers of twelve stacked racks at one time with ease. All products are visible and accessible at all times, simplifying order makeup. Construction features prevent one rack from falling into another, eliminating damaged goods. Chrome finish used by Nestaway picks up a minimum of dirt and wax. If freezing is a part of your operation, Nestaway is ideal for the job. Open construction permits rapid freezing and defrosting, and the finish is unaffected by temperature changes.

TRANSPORTATION: Moving baked goods is faster and more efficient with Nestaway. Loading trucks and trailers with Nestaway units and transporting them direct to outlets or distribution points can be accomplished in a minimum of time. Transferring products to other containers or racks for transporting is never necessary when the Nestaway System is used. Nestaway units are "engineered" to handle your product to maximum capacity in trucks and trailers. Product sizes and varieties as well as truck and trailer sizes are vital factors. Individual units or stacks are easily tagged for quick identification at drop-off points. Visual control of products prevents costly mistakes. Interlocking stacking features prevent product damage enroute. You can haul bigger payloads with no damage to your products, and on return trips your trucks can carry three times as many empties, thanks to Nestaway's patented nesting features.

MERCHANDISING: With the Nestaway System, your products arrive at the store in perfect condition, and completely visible for your inspection and count. Stacked units can be rolled directly to island for easy and quick loading of your displays. All your products are accessible without the necessity of unstacking the racks. Volume items or special items can be displayed and merchandised direct from the Nestaway units. Sales can be increased by encouraging impulse buying when placing loaded racks as display units near related counters; such as, buns near the meat department. Chrome finish offers attractive displays, and does not detract from your store fixtures. When empty, the entire system can be nested to less than 25% of the original space, saving you valuable backroom floor space.

WRAPPER

TO

CONSUMER

"Engineered Material Handling Systems"

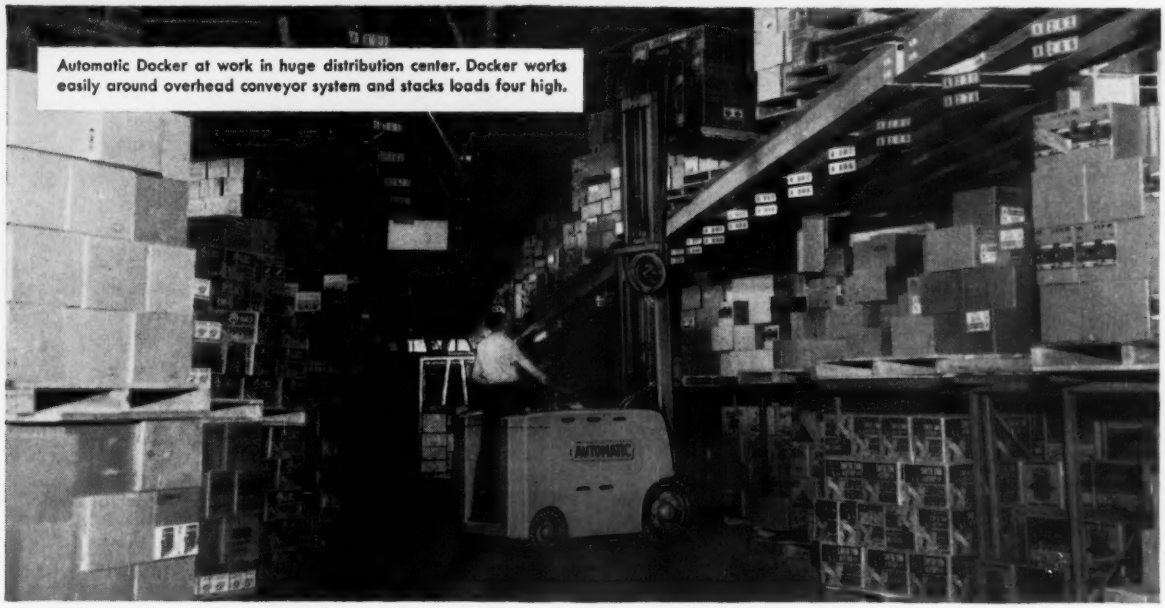
NESTAWAY INC.

2108 PAYNE AVE., CLEVELAND 14, OHIO

NO OTHER HANDLING SYSTEM IS SO FLEXIBLE OR SO VERSATILE AS NESTAWAY, THE ONLY COMPLETELY ENGINEERED SYSTEM THAT HANDLES BAKED GOODS EVERY STEP OF THE WAY FROM THE WRAPPER TO THE CONSUMER.

WRITE FOR *FREE* BROCHURE

AUTOMATIC



Automatic Docker at work in huge distribution center. Docker works easily around overhead conveyor system and stacks loads four high.

You Can Forget Congested Area Handling Problems

...When the Electric End Control "DOCKER" Moves In!

Heavy loads, congested areas? No problem, if you have an Automatic Docker on the job. Because of its compact, stand-up, end-control design, the Docker has superior maneuverability. It can work easily in any type of congested area: on shipping docks, inside trailers or box cars, in narrow aisles. It lets you load, unload, move and stack with the speed and efficiency you want!

Small as it is, the Docker provides safety and convenience for the operator. Maximum stability is provided by 4-wheel suspension and low center of gravity. Superior productivity is made possible by fast lift and travel speeds. Available in capacities from 1500 lbs. to 4000 lbs.

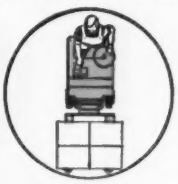
Investigate the advantages the Docker offers you and learn how it can cut your materials handling costs to a minimum. Send for our informative, illustrated booklet. Just mail the coupon.

Advanced Materials Handling at Less Cost to You

Look at the PLUS Features Docker Gives You

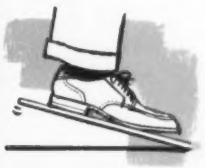
LOW BACK STEP

Safer, less tiring; easier for operator to handle quick on-and-off operations.



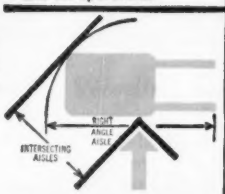
FULL VISIBILITY

Gives operator clear, uncluttered view of surrounding area for maximum safety.



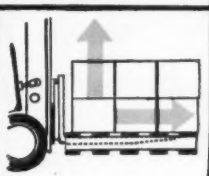
SAFETY BRAKE CONTROL

Brake is on when foot is raised. Prevents costly accidents and collisions.



ZERO INSIDE TURN RADIUS

Maneuvers easily and quickly in cramped, congested quarters.



INCHING CONTROL

Foot-controlled inching operates truck in low speed while load is raised.

NO GAS FUMES

Quiet-operating electric power means no toxic gas fumes or noise in congested areas where other employees are working.

Electric Automatic® Industrial Trucks

AUTOMATIC TRANSPORTATION COMPANY

Division of The Yale & Towne Manufacturing Company

125 West 87th Street, Dept. D-9, Chicago 20, Illinois

WORLD'S LARGEST EXCLUSIVE BUILDER OF ELECTRIC-DRIVEN INDUSTRIAL TRUCKS

☐ Rush complete information on Automatic DOCKER of ___ lbs. capacity.
☐ Full details on Lease and convenient Budget-Purchase Plans.

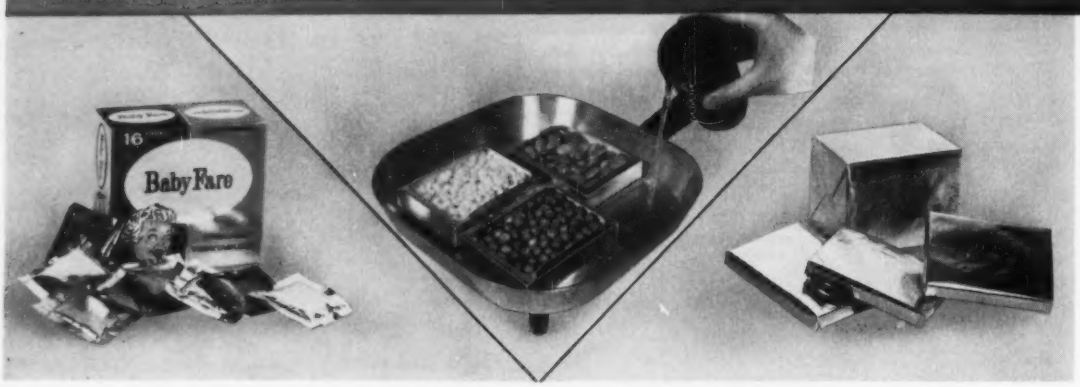
Name _____ Title _____

Firm Name _____

Address _____

City & Zone _____ State _____

NEW PACKAGES & PRODUCTS



Shapes of Things to Come

Highlighting the Reynolds Metals Co. exhibit at the annual meeting of the National Assn. of Frozen Food Packers were these three aluminum foil "dream packages."

▶ Boilable pillow-packs for frozen baby food improve vitamin retention. Each pack holds 1½ oz. of food, require just 4 min. in boiling water to prepare. The packs may be colored for additional "child appeal" and offer the advantages of lower shipping weight and reduced breakage when compared to jars.

▶ "Freeze it, cook it, and serve it—all in the same carton" are the instructions for preparation of an aluminum foil carton for frozen meats or vegetables. The 6-oz. unit may be bundled and sold in multiples.

▶ Boilable foil packages for pre-blocked vegetables offer a "new look" in merchandising. It holds 6-oz., just enough for two people.

In packaging, a block of frozen food is passed through conventional packaging machinery and overwrapped with a special foil, web-fed from roll stock, then fin-sealed.

Four, five, or six of these blocks could be multipacked in a printed foil overwrap.

Circle 1 on Reader Service Card

Solves Unusual Label Problem

Directed at solving the peculiar problems of automatic dispensing is a new label design for Fearn Laboratories, Inc., suppliers for food concentrates for dispensing equipment.

A bright combination of design color identification and printing give quick brand identification and a quality look.

A black "Chinese oval" symbol and a bold "f" serve as a trademark. A secondary color on the balance of the label and the "f" crossbar identifies the concentrate flavor. Lydian type for imprinting names and numbers adds a classic look. Simplicity of design and absence of close registry needs make it possible for imprint and symbol to be printed at the same time.

Cheese From the Ol' Sod

St. Patrick's Day, fittingly enough, marked the debut of a new Irish export in American markets. The product is a processed cheese spread, made in wine cheshire, Irish emmenthal, and blarney with ham.

Carrying the Golden Vale label, the cheese is made in conventional ¾ oz. wedges. These are foil wrapped with a paper label. Wedges are marketed in circular cartons.

A variety pack, featuring complete wheels of each of the three cheese flavors, consists of a truncated triangle carton, brightly printed in six colors.

Processor is Golden Vale Food Products Co., Rath Luirc, Cork, Ireland. American distributor is Otto Roth & Co., New York City.

Test Market Potato Products

Two new products from Pillsbury Co. are creating a marketing stir in test markets in New York, Kansas, and California. Quick Hash Brown Potatoes and Instant Mashed Potatoes represent the first expansion of the Pillsbury label to other than flour-based products.

Quick Hash Brown are potato bits which reconstitute when simmered in water for 15 min. The 9-oz. package serves eight.

The instant mashed potatoes are in flake form, reconstitute immediately with addition of liquids and seasoning. The 7-oz. package serves eight.

Catching the Consumer's Eye

Increased product identification and better visibility on dealers shelves are the selling points of Chef Boy-Ar-Dee's new label design.

First product to dress in the new label are canned ravioli and pizza mix in a carton. The entire line will soon reflect the change.

More realistic illustrations of the products spark the appeal of the new labels. Large upper and lower case type set in large oval panels.

Processor expects the new label to increase quick turn-over, spelling higher profits for dealers.

Trademark, Window Spark Packages

Redesigned packages for Wagner Baking Corp.'s pies feature a bright mother-daughter trademark and a bowl-shaped window.

The trademark is printed in two shades of blue on a white background, on the 4-, 6-, and 8-in. packages. The slogan "Why Bake When You Can Buy," appears as part of the skirt decoration. Stylized Pennsylvania Dutch designs help carry out the "home-baked" appeal.

The bowl-shaped window offers the consumer a good glimpse of the contents.

The glassine envelope for the 4-in. pie has a white cross hatched printed pattern on the window.

Designer is Jim Nash Associates.

Circle 2 on Reader Service Card

Swedish Carton Available Here

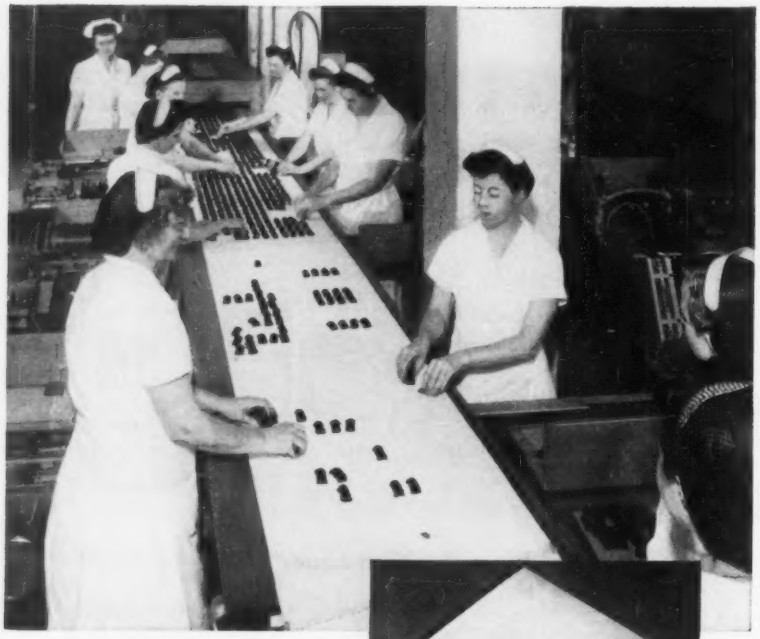
Now available in the United States for the first time is a new frozen carton which eliminates inner- and over-wrap.

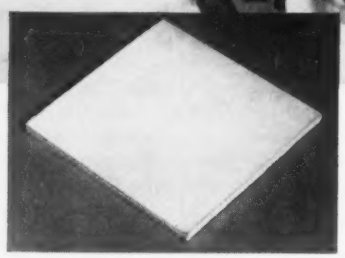
Now distributed here by Mead-Atlanta Paper Co., the package was developed in Sweden several years ago (FE, April, 1955, p. 63).

Called Expresso, the carton is sealed with thin strips of coated paper, then heat-sealed at both ends with conventional cover flaps, making it leakproof. A special cutting of the carton's corners gives a fibrous tuft and a plastic-like edge, reinforcing the tightness of the package.

Mead Atlanta will manufacture and market the machine and carton.

Circle 3 on Reader Service Card





Victor

ROH Belting Has Excellent Resistance to Heat, Food Oils and Commercial Shortenings

Victor Style ROH belting was especially designed for conveying such foods as potato chips, hot bread, fresh fish, processed poultry and meats, freshly baked cookies and crackers – that quickly shorten the life of ordinary types of belting.

In ROH belting, plies of white Hycar impregnated duck are vulcanized together to form a heat-oil-acid resistant belting with a cover so smooth that dirt and food particles can't cling. Easily kept sanitary, too – clean with hot water or steam. Moisture can't penetrate the tough surface and cause checking or rotting. Strictly non-toxic.

Victor Style ROH is made in 2-, 3- and 4-ply thicknesses in widths up to 48 inches and available vulcanized endless or with "laced" joint for almost all food conveying applications. Write today for Circular 22 containing complete specifications and prices of Style ROH – the belting especially designed for the food processing industry.

A COMPLETE LINE, including: Neoprene Belting • Balata Belting • Solid Woven Belting—untreated, impregnated, coated – many widths and plies • Canvas Stitched Belting • Hycar Belting • Belting Specialties

Victor
Balata & Textile Belting Co.
53 Park Place, New York 7 • 300-306 W. Hubbard Street, Chicago 10
Factory: Easton, Pa.

New Packages and Products

For Fat-Free Frying

A new non-fat cooking aid called Pam Dry Fry is now marketed by Pam Industries, Chicago. A pure vegetable extract, Pam has a natural appeal in the diet-conscious market.

The aerosol package permits the consumer to spray the product on the cooking surface, eliminating the need for a fat or oil. Another advantage is reported in the fact that Pam leaves cooking surfaces cleaner than oils or fats.

Product need not be refrigerated.

Packaging Briefs

Polymer-Coated material called K-Film, a DuPont product is now used for wrapping six-packs of D. L. Clark Co. candy bars. (4)

8-Oz. Economy Jar is newest package for Nescafe.

Switch from Foil to a metallized paper label on Westgate-California Corp.'s tuna fish can has cut label spoilage and waste. Labels are made by Flexible Packaging Div., Continental Can Co. (5)

3-Lb. Can for Spry is now decorated with a Gradma Moses scene under the removable label.

Tamperproof and Attractive are Cel-O-Seal bands used to cap necks of Cross & Blackwell sauces. Bands are supplied by Armstrong Cork Co. (6)

16-Oz. Aerosols rather than 12-oz. are now used for Borden's Dairies and Super Whip Sales Co. Cans are made by Continental Can Co. (7)

Polyethylene Pouches are now used by Hayes Food Products for its bean line. Supplier is Dobeckmun. (8)

Circle key numbers on Reader Service Card

For more data, circle 267 on Reader Service Card

Just Between You and Your Customer

The first purchase of a new product may be faith in a respected name . . . but the second purchase is a matter of confidence . . . confidence that flavor and quality will always be the same. In keeping that faith, protective packaging is vital.

This is Riegel's business: The development and manufacture of packaging materials designed for **protection** . . . with emphasis on low cost, appearance, and high-speed machinability. More than 600 Riegel materials available . . . papers, foils, films, and combinations . . . waxed, coated, plain, or printed . . . as your products require. They can help win acceptance for your products. Write to Riegel Paper Corporation, 260 Madison Ave., New York 16.

Hershey's new and unique "Mint Chocolate" is protected by a special Riegel Pouchpak...printed on our new 8-color gravure...Heat-seal coated for high speed filling and forming on pillow-type packaging equipment.

Riegel

PROTECTIVE PACKAGING MATERIALS

For more data, circle 268 on Reader Service Card

GOT A FOOD PROCESSING PROBLEM

Sunkist technical advisers...over 400 different citrus products for industry...can help you solve it!

SUNKIST KNOW-HOW produces the finest citrus products to be had. That same know-how—the backlog of more than 60 years experience—and those citrus products—over 400 of them—can help solve your food processing problem.

Every course on the American menu has profited from Sunkist research or Exchange products. We've made a good condensed soup glorious by adding a few ounces of Exchange Lemon Juice to *100 gallons* of it. We have stopped pies from "bleeding" by using Exchange Low Methoxyl Pectin in the filling.

And between soup and dessert, we've devised enough manufacturing processes for the benefit of the American food processor to get Sunkist 118 separate U.S. patents!

Sunkist technical experts will be glad to work *with* you—in your own plant—or *for* you—in their own citrus research department. Write—or, if it's urgent, telephone—and a Sunkist man will call on you.

Sunkist Growers

Exchange

PRODUCTS SALES DEPARTMENT • ONTARIO, CALIF.

EXCHANGE BRAND CITRUS PRODUCTS widely used by leading food processors include: *Lemon Juice...Orange Juice...Orange Oil... Lemon Oil...Frozen Orange Puree...Frozen Lemon Puree... Preserver's Pectin...Low Methoxyl Pectin.*

For more data, circle 269 on Reader Service Card

LEMON-LIME flavored soft drink called Teem is newest product of Pepsi-Cola Co. Four years of research and two of anonymous market testing preceded its debut this month.

New Bread for Baby

Ward Baking and Gerber Products have joined forces in a plan to market the first basic bread food designed to meet the nutritional requirements of babies and young children.

The result of three years of research, the product will find a ready market in the 22,200,000 children under six years of age in the U. S.

Called Gerber's Primary Food, the bread will be produced by Ward in the areas which it now serves. Ward will offer franchises to baking companies in areas not served by the company, and in Canada.

Circle 9 on Reader Service Card

New Product Shorts

Designed for Baby are two new H. J. Heinz products: strained beef and egg noodles, bananas and pineapple.

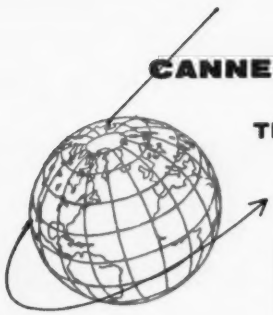
Tuna Rolls for parties and snacks is newest frozen from West Shore Products.

Creamed Chicken and Biscuits—a casserole for two—is latest frozen marketed by Stokely-Van Camp Inc.

Frozen French-Fried Yams are now marketed by Arkansas Frozen Foods, Inc.

Now Available in all eastern markets is cocoanut cream pie made by Farm House Frozen Food Co.

Frozen Concentrate called Chill-Ripe Punch is being packed by Birds Eye Div., General Foods Corp. Punch is a fruit blend.



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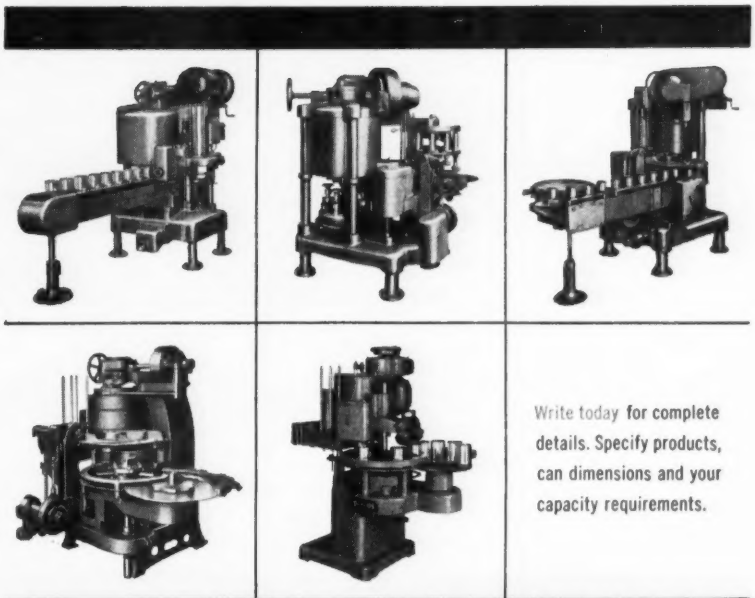

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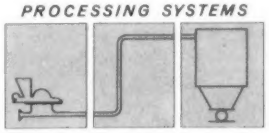

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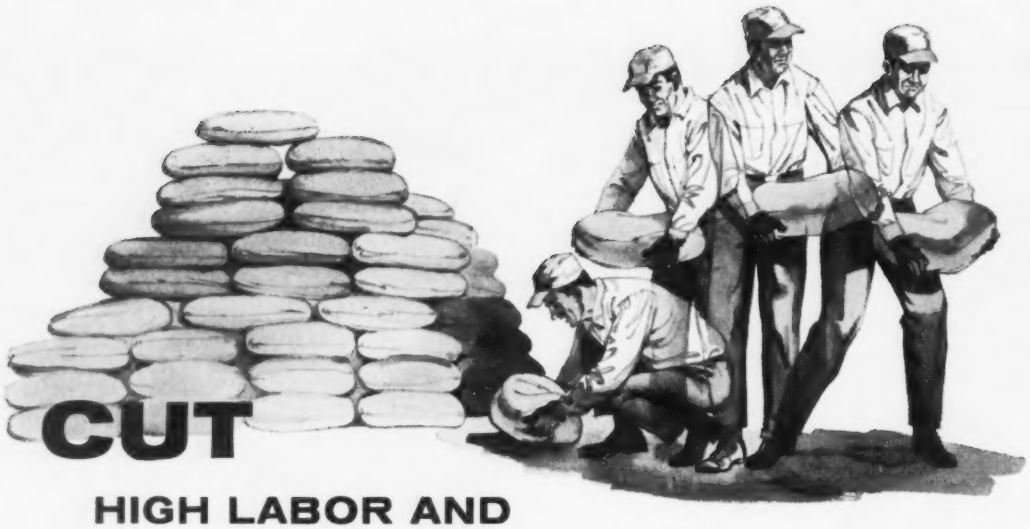

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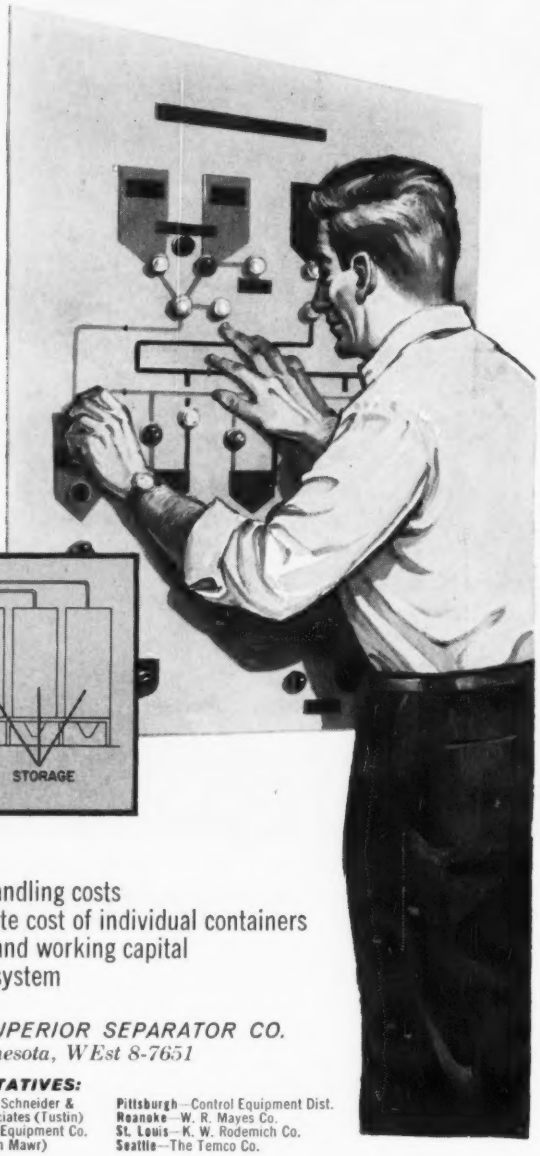

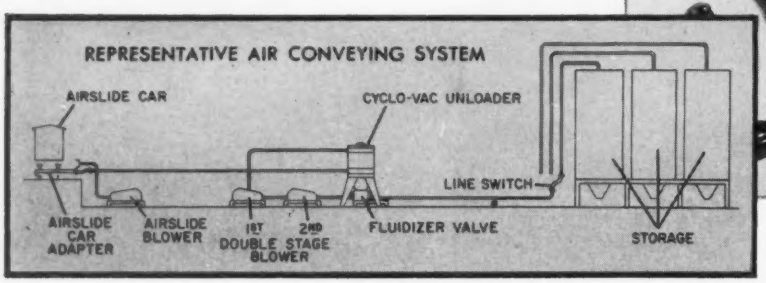

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Blueprint for Better Government Challenges Industry

That the political climate for business is heavily laden with smog is no secret. There is an unhealthy haze in the minds of too many people in government from local to national levels. Most politicians fail to understand business—its aims, its principles, its economics, and the importance of its continued welfare.

There is lightning, too, in the political atmosphere of business. The bolts are cast by politically organized labor and men in government who are beholden to labor for their election, and future reelection.

Too many beholden to labor

Do politicians care whether business likes how they operate in office? Why should they? Since they don't fully understand business, they don't realize the import of their actions. Anyway, labor votes come in much larger packages. That is why a high percentage of the politicians elected last November have labor to thank for their success.

If this situation continues, practically all government in this country from grass-root levels to Washington will be motivated by labor.

This can be fatal to free enterprise. It can impair our multi-party system of democratic government.

The answer long has been urged upon business men. It is: "Participate in politics."

This wise advice has produced little action. But there now is a practical and proven plan that will get more business and management people into politics—at the precinct level where elections are won.

There's a way to redress the balance

We refer to a plan developed by industries in Syracuse, N. Y., and successfully tested on the political battleground of that area. The purpose of this plan is simply to educate junior executives about practical local politics and encourage them to become active. There is no attempt to get the trainees into a particular party. Nor do companies providing the training take any political action. The idea is to get high-caliber men who understand business into the political arena as free-wheeling individuals.

How this can be done is spelled out in a kit of materials that can be bought for $200 (near cost) from Manufacturers Association of Syracuse. Or you can get pointers from "The Businessman's Guide to Practical Politics," published by Henry Regnery & Co., Chicago.

By virtue of numbers, management men in the food industry can do a lot of political good. For business and for country, they should do something before November, 1960.

Now FE Tells You "Who's Building What"

Another special service to management men has been introduced by FE. It is a regular monthly feature, "Who's Building What," page 17.

This is a report of modernization and expansion plans of your competitors. And it contains tips to potential markets if you sell raw materials or ingredients to other food firms.

A nation-wide corps of correspondents ferrets out this information exclusively for McGraw-Hill's construction news services.

It pays to know what's being planned before it becomes a dynamic reality in your marketing picture.

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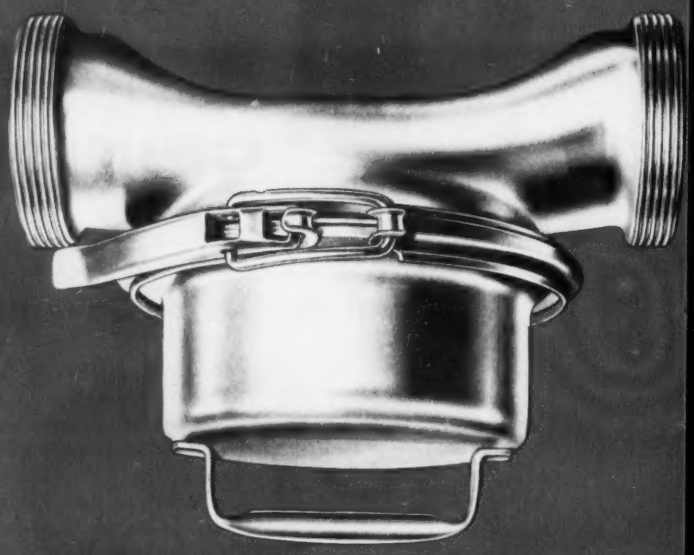
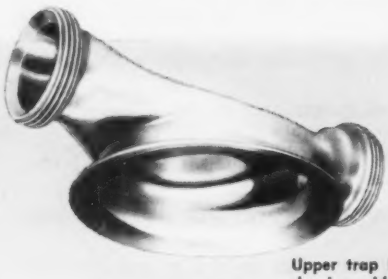
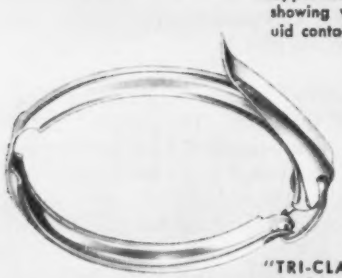
TRAPS



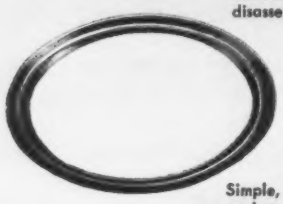
...to assure positive protection against tramp metal



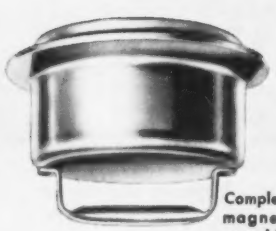
Upper trap body, showing wide liquid contact area.



"TRI-CLAMP"® ring clamp for instant assembly and disassembly.



Simple, leak-proof gasket.



Completely sealed magnet housing assembly.

Here is the best way to eliminate the hazard of stray metal in your liquid conveying lines . . . tramp iron that could spoil your product or damage your machinery. With this new Tri-Clover full-flow Magnetic Trap, protection is positively assured. Advance design in stainless steel permits easy removal of all trapped foreign matter through instant disassembly of the trap.

These new Traps employ an extremely powerful non-electric Alnico one-piece permanent magnet to assure maximum removal of tramp metal. They are available in both Sanitary (polished finish, with Acme Threads) and Industrial (pickled finish, I.P.S. threaded or flanged) construction in 2", 3" and 4" sizes. Both types are fabricated from wrought sheet type 316 stainless steel, and offer maximum corrosion-resistance, streamlined flow, with minimum product agitation and friction.

As illustrated at the left, the new Tri-Clover Magnetic Trap can be easily and quickly cleaned without removing it from the line. All that is required is to unsnap the ring clamp. The clamp, magnet and gasket are freed and ready to clean. That is all there is to it!

For complete details see your nearest TRI-CLOVER DISTRIBUTOR, or write for New Bulletin A55-58.

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LADISH CO.

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(Advertisement)

The Story of Nature's Yellow

WHY IS COLOR SO IMPORTANT?

Colors call to your appetite. You pick the big, red, beautiful apple and every bite seems to taste better because it's so nicely red. The good, thick steak looks crusty brown, and the center's a wonderful pink.

Some foods are naturally attractive. Some must be made so. Butter and margarine must be a good yellow for widest appeal. Gelatin desserts, children's lollipops and hard candy, soft drinks, ice cream, and many other foods must be colored for consumer acceptance. Man so often must help nature out!

Making foods look better, making them taste better, making them nutritionally more valuable are practices everyone accepts and expects. Food processors can now add pure beta carotene Roche* to give natural yellow color, plus vitamin A value, to their good foods.

WORDS AND MEANINGS

Carotene (sometimes spelled *carotin*) is the root word. It designates a color compound which occurs naturally in some vegetables and fruit.

Carotenoid describes a family of color compounds, found widely distributed in nature, which gives many flowers, fruits, leaves, and vegetables their characteristic color. The ending "oid" is the way chemists say: "like carotene." All carotenoids are similar, chemically, to beta carotene which is the most important and widely distributed member of the carotenoid family.

Beta Carotene. The Greek-letter prefix is used to distinguish this compound from *alpha* and *gamma* carotene — compounds which have somewhat similar chemical structure but are not nearly so important in human nutrition.

Provitamins describe substances which are changed in the body into vitamins. Beta carotene is a provitamin; the body converts it into vitamin A which we all need for good health.

*Roche — Reg. U. S. Pat. Off.

CAROTENE IS NO STRANGER

Carotene is as common as carrots, or sweet potatoes, or green leaves, or the natural yellow of butter. Carotene is the pigment which makes carrots, *carrot-colored*. Carotene and other carotenoids, with chlorophyll, are present in the green leaves of plants. Vivid proof of this is seen when tree leaves turn yellow in the fall.

A LARGE FAMILY WITH MANY RELATIONS

Nature has many pigments: the delicious red of a ripe strawberry, the many shades of green in leaves, the blue of cornflowers, the lavender of lilacs, the differing browns of bark, the bright yellow of daffodils, the darker yellow of plump pumpkins.

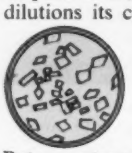
All of the carotenoid colors have somewhat the same chemical structure. As their chemistry varies, so do their properties. Different carotenoids may exist side by side, as in some tomato species which contain beta carotene and lycopene, the so-called tomato red.

No one knows exactly how many carotenoids there are in nature. Some authorities believe there may be as many as 200.

Of all the carotenoids now known, beta carotene is the most useful for human beings, because of its value as a provitamin A. Not all carotenoids are provitamins. Alpha carotene, gamma carotene, cryptoxanthin (found in yellow corn) and some less well-known compounds have this property to only a limited extent.

BETA CAROTENE DESCRIBED

In pure form, beta carotene is deep violet-red in color; in dilutions its color is yellow. The crystals are flat platelets in form. The pure product has very powerful coloring properties. For example, three grams of the pure crystals, enough to cover an American quarter-dollar, will color a half-ton of margarine to the accepted yellow color.



Beta carotene is soluble in various oils, vegetable oils being preferred for food use. It is insoluble in water.

In the solutions customarily used in food processing, beta carotene Roche has practically no odor or taste, nor does it impart any odor or taste to the foods with which it is mixed.

Only a minute amount of crystalline beta carotene is needed for coloring. To simplify measurement for food processors, Roche has made suspensions of its finely ground crystals in vegetable oil. These are standardized, so that products with uniform color will result when they are used.

BETA CAROTENE IS A SAFE COLOR

Beta carotene is one of nature's own coloring agents. It has been consumed in food for thousands upon thousands of years. Even with this evidence of safety in usage, Hoffmann-La Roche did not market its man-made duplicate of nature's product until careful studies showed that this substance produced no undesirable effects in test animals. These and other tests indicate that beta carotene produced by the Roche process is safe and desirable for use in foods.

. . . BETA CAROTENE

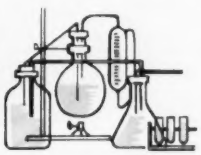
by SCIENCE WRITER

A CAPSULE HISTORY

In 1831, Wackenroder, curious to know what caused the characteristic color of carrots, isolated carotene from the roots of that vegetable. Based on his observation, Willstätter established carotene's empirical formula in 1906.

In 1919 the vitamin A activity of the carotenoids was discovered by Steenbock.

Between 1928 and 1930, Zechmeister, Karrer, and Kuhn established the constitution of carotene and assigned its structural formula.



In 1953, the successful synthesis of beta carotene was made by Hoffmann-La Roche whose chemists *duplicated* nature's own color in the laboratory. Commercial production followed within a year.

Carotene has been used by food processors in the United States for many years. Natural extracts have been made from carrots, palm oil, alfalfa, and other sources for more than 25 years. None of these natural extracts, however, has the purity of the man-made substance produced by Hoffmann-La Roche.

FOODS USING BETA CAROTENE

Beta carotene Roche is now used every day as a safe, natural, yellow coloring agent for such foods as:

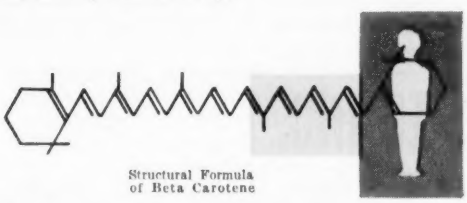
Margarine	**Salad and Cooking Oils**
Shortening	**Confections**
Lard	**Yellow Baked Products**
Butter	**Beverages**
Cheese	**Ice Cream**

It is capable of being used in almost any processed food. Developments at Hoffmann-La Roche have made it available for use in fatty foods and in special water-dispersible form for other foods.

An acceptable coloring in the U.S.A. since 1947, beta carotene has also received official sanction in Austria, Australia, Denmark, Finland, Brazil, Germany, Great Britain, The Netherlands, Norway, and Switzerland.

NUTRITIONAL VALUE

Beta carotene is a provitamin; it is converted into vitamin A in the healthy human body.



Structural Formula of Beta Carotene

Its biological activity is measured in units of vitamin A activity. One gram of beta carotene equals 1,666,700 U.S.P. units of vitamin A, while a gram of vitamin A (alcohol) equals 3,333,300 U.S.P. units. One U.S.P. unit is equal to 0.344 micrograms of vitamin A acetate.

We need vitamin A to guard the health of our eyes and our skin, membranes, and other specialized tissues. It helps build our resistance to infections. Vitamin A is needed for normal growth from infancy to maturity.

Beta carotene Roche is more than just another efficient food color. As it is so intimately associated with vitamin A, it comes close to being an essential substance in itself.

Of the six provitamins A known to exist in nature, beta carotene is the most widely distributed, the most potent in vitamin A activity, and the most readily available.

The Food and Nutrition Board of the National Research Council recommends that healthy adults in the U.S.A. receive 5,000 U.S.P. units of vitamin A daily in their diets. The requirements for pregnancy, for infants and children, vary above and below this amount.

OPENING ANOTHER DOOR TO THE FUTURE

The successful synthesis of vitamin A by Roche scientists led to the synthesis of beta carotene. The latter synthesis will no doubt lead to the manufacture of other carotenoids. Right now, work is being done on "duplicating" lycopene, the dominant red of tomatoes, and on cryptoxanthin, a yellow color found in corn. The development of pure beta carotene Roche is really only a beginning, not an ending.

SOME NEW WORDS ON FOOD PACKAGES

The identifying words: "artificially colored with beta carotene" on the labels of margarine, yellow shortening, yellow cake mixes, and various other food products signify that the manufacturer has used a safe yellow color which was conceived by nature itself for coloring foods and adding to their nutritional value.

HELP FOR YOU

Reprints of this article are available in reasonable quantities as a teaching aid or for public education. For food processors the Roche technical brochure is available. Those interested specifically in the scientific study of beta carotene will find published material from Roche most helpful. In making your request, please specify the type of information you want. There is no charge, of course.

Please address all requests to Vitamin Division, Department of Education, Hoffmann-La Roche Inc., Nutley 10, N. J. In Canada: Hoffmann-La Roche Ltd., 1956 Bourdon Street, St. Laurent, Montreal 9, P. Q.

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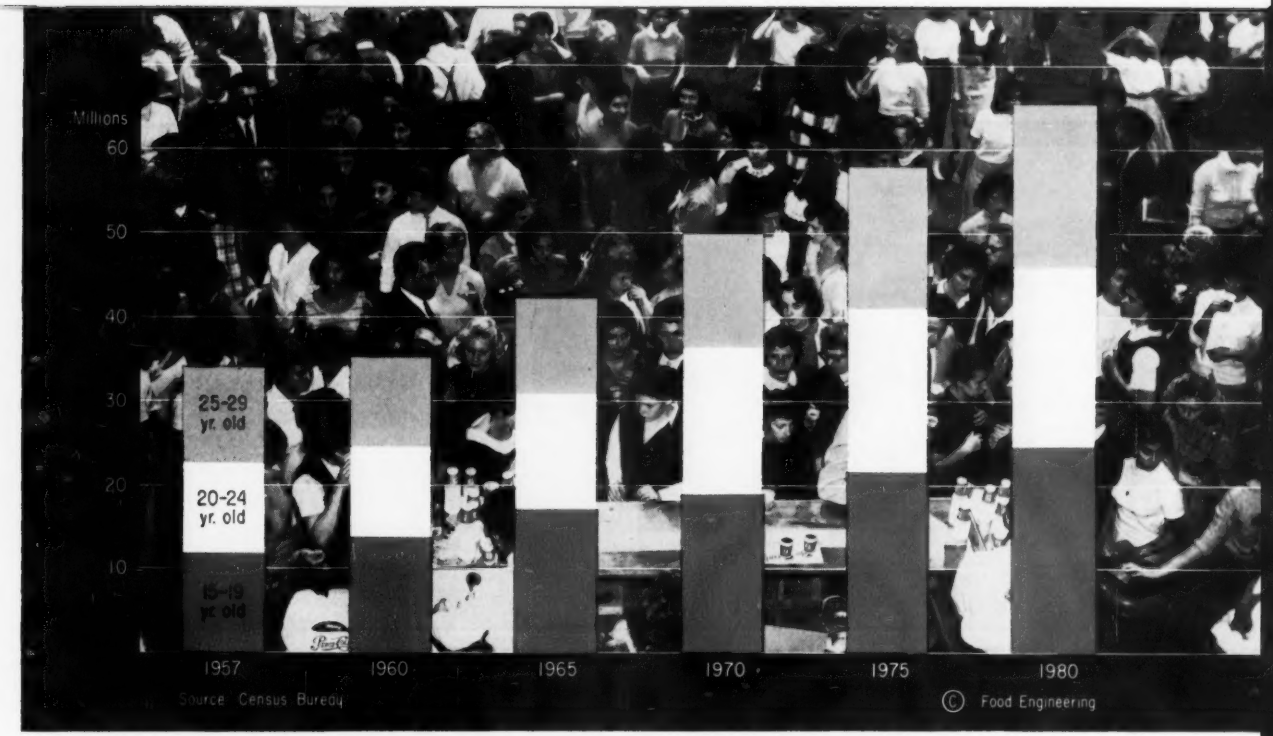


ATTRACTIVE TARGET: Here's how fast the 15-29 year-old group will expand in the next two decades.

Are You Set to Ride Youth Boom?

Population 'explosion' of next two decades—with 16 million new customers in 15- to 29-yr-old-group by 1970—opens big new selling potentials . . . Here's how fast-moving Pepsi-Cola has streamlined its marketing program to get a head start in winning this coveted prize.

ARE YOU READY for the challenges—and opportunities—about to break in the '60s? That's the question that seriously concerns forward-looking management today.

Even if you think you're doing OK now, that's false comfort. For you can be sure there are fast-comers making big plans. And if you're not "on beam", their programs may quickly cut you down to size.

One company that's not depending on past achievements to generate sales in the coming decade is Pepsi-Cola. Despite an enviable record of company growth during the past nine years, that firm's astute management isn't standing pat, has just carried out a marketing realignment putting it on even surer footing for coping with what's ahead.

The reorganized marketing structure moves Pepsi from the "Beat Coke" psychology that helped fire enthusiasm in the past to a broader marketing strategy that's directed toward the total beverage market. The new setup is also designed to aid Pepsi with more sharp-focused long-range planning, faster decision-making, and stronger bottler ties.

Significantly, Pepsi's marketing realignment comes at a time of fast growth—which since '50 (when present management took over) has outpaced the soft drink field as a whole. Since that year, the firm's case sales have shot up 160% while total beverage volume rose 32%. Last year, while the business recession and bad summer weather pinched overall beverage sales, Pepsi racked up a 5-6% gain.

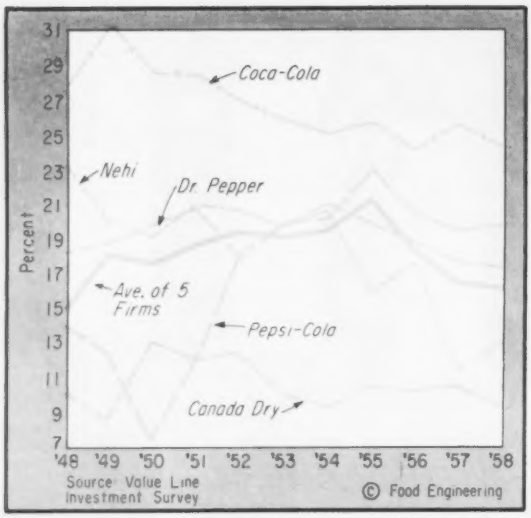
But while sales flourished, the company felt growing pains: Services that mushroomed with each crisis, choked-up communications that delayed decision-making, and top-heavy work loads that left key officials little time for necessary long-range planning. Looking ahead to the population boom of the '60s, and the stiffer competition that's sure to come as rivals reach for the same prize, management last year took a hard look at its marketing program.

If the population boom was a persuasive factor, that's because of the handsome market it spells for the soft-drink age group—which William C. Durkee, Pepsi's marketing v.-p., places in the 15- to 29-yr.-old category.

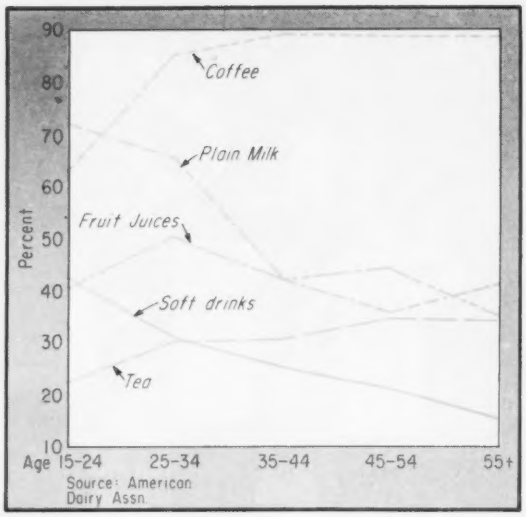
Census Bureau projections see this age group 'exploding' in the next two decades. Numbering about 34.0 million in '57, the 15- to 29-yr.-olds should be 47% greater (50.3 million) by '70, and a whopping 93% greater (65.8 million) by '80.

THAYER C. TAYLOR
Associate Editor, "Food Engineering"

FOOD ENGINEERING
FOR MANAGEMENT IN MANUFACTURING, PACKAGING, MARKETING



PEPSI'S PROFIT MARGINS surged from 4th to 2nd place in soda pop sweepsteaks, while those of competitors declined. Rise has been even more spectacular since '50 as result of aggressive promotions and hard-hitting selling.



BIG CHALLENGE: To spread product popularity beyond 15- to 24-yr.-old age group. Percentage of people who down a carbonated beverage at least once a day declines as they get older. Pepsi's "Be Sociable" theme aims to overcome this.

With such an attractive market ahead, soft drink firms are gearing themselves to siphon off bigger chunks of it. Smaller firms, for example, have set their aims on broader geographical distribution.

Dr. Pepper, fifth-ranking in the field, has targeted national marketing by '60. And the firm has muscled up its sales force with the creation of three new territorial divisions, forged stronger bottler ties with an enlarged field staff, and set a record advertising budget for '59. As a result, the firm looks to a 9% gain this year.

Fourth-ranking Nehi, also expansion-minded, last year welded advertising and sales closer with a new marketing department, and gave management a surer grasp with new talent, sees sales gaining 10%.

Currently, the company hopes to bring future goals into closer focus with a broad-gage marketing study that analyzes volume potential on every consumer front: Socio-economic, geographic, and age level. When finished, the study will serve as a basis for pinpointing sales and advertising efforts, as well as upgrading the efficiency of national and local operations.

Canada Dry, number three in the field, has earmarked $6 million in new capital financing for an ambitious expansion-modernization program.

Of course, Pepsi's arch rival, Coca-Cola, isn't standing still. That firm has broadened its product line with five non-colas, and has lined up a record ad budget for '59.

For Pepsi, all this underscores the need for shrewder marketing. States President Herbert L. Barnet: "Marketing is our most important corporate function. Our whole business is merchandising, advertising, and promotion."

Just how important the marketing function is can be seen from the hefty outlays beverage makers devote to wooing customers. The "Value Line Investment Survey" estimates that Pepsi allocates 40% of sales to merchandising, Coca-Cola 25%, and Dr. Pepper 27%.

To make sure that such a sizable selling budget does the job right, Pepsi last year assigned Durkee to find out where the marketing program needed strengthening.

At that time, marketing included four functions: Advertising, research, equipment & engineering (vending and display), and national accounts. Now, under Durkee's new setup, the activities have been broadened to 13: Sales, advertising, equipment development, marketing research, national accounts, syrup sales, promotion, training, new product development, new markets, product control, plant engineering, and a field marketing organization.

For smoother coordination of the increased activities, Durkee operates with a written-out marketing plan—something Pepsi didn't have before. And, reflecting the marketing division's important say in company policies, Durkee reports directly to the top management group (consisting of Barnet, Chairman Alfred N. Steele, and Executive V.-P. Emmett R. O'Connell).

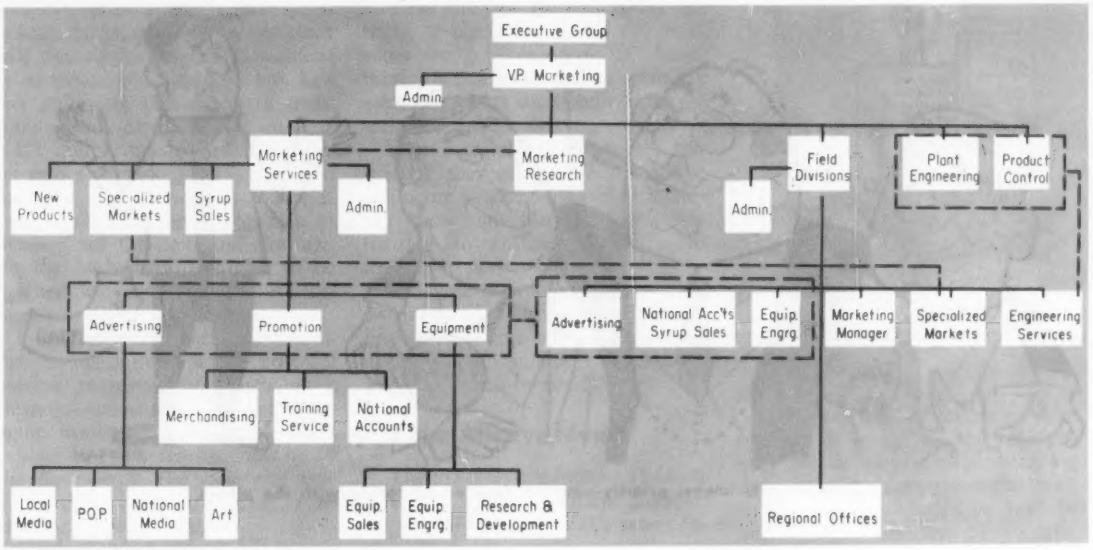
A key feature of the new setup is a two-platoon system that involves a marketing staff based at the New York headquarters and a modified parallel field staff in each of the four division offices (Washington, Chicago, Dallas, and Los Angeles). Plans, programs, and policies are formulated by the New York crew, then tailored to the local situation by each division staff. Aim here is to let each group do what it's best suited for.

Among the benefits Pepsi expects from the marketing realignment are precisioned long-range planning, speeded up new product development, wider distribution, and stronger bottler ties.

More Dollars for Fact-Finding

As a first step, the firm doubled the marketing research budget this year. Explains Durkee: "Marketing is getting much more complicated.

"Before, there used to be one product, one price, and one package. Now, you have the demand for multiple flavors, package sizes rang-



REALIGNED SETUP at Pepsi includes: (1) Marketing v.-p. reporting directly to company's top management group, (2) a marketing staff that formulates plans at New York (left), and (3) a parallel group in each division office that translates objectives into action (right). Dotted lines show liaison maintained between departments in marketing structure.

ing from 6-oz. all the way up to the quart, and an 80¢ case price in some parts of the South while the $1.60 price prevails elsewhere."

So that marketing research can carry out its role as "the eyes and ears" of the company, the department reports directly to Durkee. This arrangement fits in with the marketing v.-p.'s long-range planning responsibility, and also frees the department from the internal inhibitions that sometimes crimp marketing research when its analytical eye turns on other departments.

New product development is another activity whose pace will be quickened by the marketing realignment. And emphasis will be upon the 42% segment of the "pop" market that non-colas represent.

Interestingly enough, in an age when product diversity has almost become a verity, both Pepsi and Coca-Cola up to now have built their growth as one-product outfits. But the increasing popularity of multiple flavor vendors, pressure from franchised bottlers who want varied products from one source, and the healthy "flavors" market carved out by regional brands—all these factors have moved the two leaders to broaden their product base.

Coca-Cola, under its export Fanta label, is market-testing lemon-lime, orange, root beer, grape, and ginger ale in this country. Chairman William E. Robinson says the items will be confined to their present three markets—Boston, Chicago, and San Francisco—for some time before being expanded to other areas.

Pepsi recently unveiled a lemon-lime drink, and plans to follow it up with a series of other flavors. The firm won't say what flavors. But chances are they will parallel the Coca-Cola varieties.

Estimates vary as to the market-share the flavors enjoy. Standard & Poor's divides it as 13% citrus, 4% ginger ale, 3% root beer and sarsaparilla, and 2% grape. Durkee figures that lemon-lime has 10-12%, and orange about 7%.

Vending units, sparked by a new "Light Look" line that's keyed to Pepsi's "Be Sociable" ad theme, will be keenly promoted because they help to defray the adverse effects bad weather has on soft drink sales during peak months (June-August). Here, the company's objective is to enlarge its 10-15% share of the vending field and cut into the 35-40% share that Coca-Cola enjoys as the result of a long head start.

Expansion of the vendors to outlets where potential is big, and wider use of the newer premix units, are two ways Pepsi plans to achieve this.

As Durkee sees it, "Wherever people gather, you have a market for soft drinks." Prime targets where Pepsi hopes to get greater mileage include outdoor locations such as grocery stores (for after-hours shoppers), service establishments (such as beauty parlors), schools (which will be more crowded than ever in the years ahead), and athletic events (as golf and tennis matches).

Durkee feels that the premix vendors will pull in plus-traffic because of their ability to deliver a more uniform quality product. Compared to the older postmix type, which blends syrup with ordinary tap water at time of dispensing, the premixer is outfitted with 5- and 10-gal. tanks of syrup and pure water that are made up at the bottling plant.

Another advantage is that the new unit gets away from glass bottles. Thus, there's less handling involved, and less breakage to worry about.

More Impact at Local Level

A good part of Pepsi's new market plan will go to strengthening bottler ties. For in the soft-drink franchise pattern, the success of the parent firm's advertising umbrella is shaped by how effectively the local bottler supports it.

To help bottlers perform at their best, Pepsi's realignment gives the four division heads greater in-the-field responsibility in recruiting local support of the parent firm's annual marketing plan. Supervising 9 regional and 106 district managers, the division heads report directly to Durkee. (*Continued on p. 56*)

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Too often, he gets lowest priority—rather than equal rating with the others.

What *Not* to Do in Plant Sanitation

Expert spotlights most frequent faults of foodmen—to help you steer clear course to a top-effective program

RAY MILLARD

J. Carl Dawson & Associates, preventive sanitation consultants, St. Louis.

FREQUENTLY PUT to us by food men is this question: "What are the most common sanitation errors in food plants? By keeping these mistakes sharply in mind, we'll know how to avoid trouble."

The practical logic of this kind of query has always appealed to us. We might add that it's interesting how plant operators tend to refer to an insanitary condition as an "error" or a "mistake," whereas the FDA inspector uses the term "violation" in his report.

Generally, the common mistakes can be traced back to faulty basic concepts.

Many of the problems stem initially from misinterpretations by top management—which too often is inclined to give sanitation the lowest priority instead of an equal rating with production and sales. Thus when economizing becomes necessary, the bulk if not all of the cutbacks may occur in the sanitation department.

Too frequently, in management's thinking, it's quite in order to assign "one of the cleaning crew" to such odd jobs as washing the top brass' cars or even running errands.

Naturally, this reduces the time given to productive cleanup work (without cutting the costs). Accordingly, management gets to pondering, after a while, why the plant's sanitation isn't up to par.

If some of the "errors" we are about to point out seem a bit elementary, bear in mind that the average food-plant operator is burdened with a myriad problems besides those of sanitation. The sanitarian, on the other hand, is very single-minded in his checking of the plant for points of actual or possible infestation or contamination. He knows exactly *what* to look for and *where* to look.

Too often, sanitation weaknesses are perpetuated under the guise of "economy." For example, the returning of raw-material containers, such as cotton bags, to the supplier to be refilled will undoubtedly save money. However, such a practice is flagrant false economy when the containers become contaminated because of repeated use. Packaging sanitary materials into contaminated containers is sheer waste.

Reducing man-hours is another "economy"—where over-indulgence leads to dangerous lags in cleaning routines. Then, when the cleaning is performed, it's usually of the inadequate "lick-and-a-promise" type.

There is no question that at times it may be necessary to economize on man-hours devoted to cleaning and associated tasks. But when such reductions are too drastic, the general sanitation level suffers.

For example, morale is seriously damaged. Workers become careless and allow things to happen that otherwise would never happen. Then you will observe makeshift containers being used for mixing, storing, or scaling off of ingredients. And you will see the most temporary kind of repairs to equipment. This, in turn, seriously affects your preventive maintenance.

Carelessness breeds carelessness, and the sanitation program further deteriorates. The perimeter areas of the plant become junky and trashy, thus attracting rodents. There follows infestation of the plant itself.

The folly of these false economies can be further demonstrated: Take time-lags in the cleaning schedules. If a plant operator fails to clean out nutritious dust and dirt accumulations in which insect eggs have been laid, he will soon find himself with a major bug problem on his hands.

When a plant operator spends good money on traps and bait stations for effective rodent control—but then

fails to provide funds or man-hours to keep the program going—he's not only wasting his original investment in materials and supplies, but he's also nullifying the effects of man-hours already expended.

It's double trouble when rodents get into a storeroom that's cluttered and dirty due to neglect. There is not only a time-consuming task of cleaning out the pests and eliminating the harborages, but also to be weighed are the losses in rodent-damaged goods.

Foresight averts mistakes. Check the comparatively small cost of needed improvements—such as a clean-out opening in a piece of equipment, insulation for sweating pipes, or skids to get stored materials up off the floor—with the expensive contamination losses resulting from absence of such items.

Further, what would FDA confiscation of the contaminated shipment cost? How long would it take to recover from the blow to your reputation? What would be the cost of lost customers?

Then again, where is the profit in using an air hose to speed up cleaning when such a practice scatters dirt all through the plant? A nominal investment in a good industrial vacuum cleaner, combined with practical training of the cleaning staff on its most effective use, will assure that dirt is thoroughly and safely removed.

In general, false ceilings and hollow walls invite pests. Through a reasonable outlay to either eliminate them or seal them tightly, management can, over a period of years, save a great deal of money which, otherwise, would be required to combat pests that breed in them.

Cost of analyzing raw materials and finished products for extraneous matter is not so great that this important segment of your program need be penalized. Certainly, appropriate adjustments can be made. But

Washing cars is not his job.

if these analyses are eliminated entirely, or placed on a "we will do it when we get around to it" basis, then management is not properly informed about the condition of its materials and products.

Your economy measures are too strict if they allow your preventive perimeter sanitation to deteriorate. For then your plant becomes less inviting to customers—and more inviting to pests.

Adequate manpower can pay big dividends in cleanliness and orderliness. Since efficiency is thus raised, assigning of sufficient manpower spells increased profits.

It's Not Always Money

The mistakes cited above illustrate how a niggardly attitude hampers an overall program. Let's now con-

'Quick blows' KO cleanliness.

sider other common mistakes that prove money isn't the only factor:

Many times, we've been called upon to lend a helping hand to food-plant sanitation programs that were floundering—not for lack of ample budgets, but from lack of organization, supervision, and centralized authority. Through either lethargy or ignorance, some managements Okay sanitation expense items without following through on them—and then are baffled when these expenditures fail to get results.

If organization and planning are missing, you have little chance for success. In such situations, employees usually don't know *who* is supposed to clean *what*. Worse still they don't know *when* various cleaning operations should be performed.

If supervision is one of the missing links, then it's likely that the cleaning work is only "middle-of-the-floor."

Management must wade into such situations with determination. First, a qualified individual must be ap-

Dirt invites bugs, not buyers.

pointed sanitarian. He then must be trained, as required, and charged with the responsibility of installing and administering a preventive sanitation program. Finally, he must be fully "backed up" by the management.

Measure of the Man

A picture of the skilled sanitarian is in order:

Through regular and detailed plant inspections, he will be able to spot departures from sound practices and, furthermore, he will be in a position to bring about corrective measures. He will think, for example, not only of cleaning up spillage when it occurs, but also of developing ways of preventing such spillages in the first place.

When stored bags or containers of raw materials are accidentally broken open, he will see that they are either re-sealed or put immediately into production. He will caution responsible employees to be more careful. And where the damage is not due to carelessness, he will search out the cause and remedy it.

The sanitarian will include, as part of his responsibilities, the training of his staff on "why, where, and how to clean." This program will require as thorough cleansing in the corners and under equipment as is performed in middle areas. He will determine whether equipment is accessible for cleaning, and if not, he will work with the maintenance supervisor on corrective adjustments.

During cleaning or painting, he'll make sure that equipment, food ingredients, and finished products are properly covered. And along with the production superintendent, he will lay stress on careful closing and covering of ingredient containers at the end of the day's production. The setting of mixing paddles on the floor

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will no longer be permitted. And if they ever do touch the floor, they will be washed before re-use.

The sanitarian will recognize still other factors. Often, there is the problem of storing obsolete equipment and old supplies. Even when equipment is not being used, it must be regularly re-cleaned to prevent accumulations of nutritious dirt.

When you calculate the expense of this additional labor, along with the rental cost of the floor space occupied, decision of whether to store or "junk" the old equipment is not hard to make. Here, the topflight sanitarian will give his management reliable estimates as to the costs involved.

Alert to potential contamination, the sanitarian will see to proper insulation of water lines that are subject to condensation. He will plan and closely supervise the use of effective residual sprays. And he will keep himself well informed on the best materials for employment in his functions, so as not to be sold a "bill of goods."

Workers Become Aware

In the development of the overall sanitation program, employees will become conscious of factors needing watching. For instance, they will become well aware that cracked or broken glass containers are a major source of product contamination.

Smoking will be permitted only in designated areas, and the filthy habit of spitting on the floor will be cause for severe discipline.

Employees' facilities, such as dressing rooms and lunch rooms, will be maintained in an orderly and clean condition—thus, in turn, fostering good morale of the working force.

Strangely enough, we still run across the mistaken belief that cats are necessary in a plant for control of rodents. However, cats, dogs, or other pets, cannot be tolerated in a food plant, since they themselves can cause contamination.

Rodents can be prevented through rodent proofing of the building—combined with thorough cleaning, safeguarded storage and, above all, general common-sense practices.

Considering the whole picture, the odds are that your own plant doesn't fall into that minority category of companies that are enticed by false economies or are heedless of proper supervision and planning. But with good sanitation your prime criterion, it's always wise to make sure—and be *constantly* sure.—*End*

Ole Sage Episode

Do Credit Unions Really Aid Management?

OPENING the monthly luncheon discussion, Ole Sage reminded assembled Guff & Gripers: "We left off at our last meeting with a battery of questions on credit unions–How start one? What's management's role? And . . ."

Ed Strong was waving. "I lined those queries up, Ole," he remarked with a grin. "Can I suggest that we begin today with my last–and $64–questions: Does putting in a credit union actually benefit management? And if so, how?"

"Shoot, Ole," Batt Bulwark challenged sarcastically. "Tell us, if you can, how a union-run credit setup can be a factor in improving a company's status."

Ole responded calmly: "If you're implying that credit unions are dominated by labor unions, Batt, the facts are against you. Of the 18,433 credit unions in the U. S. in 1956, only a little more than 1,000 were established for and by members of local labor unions. That's a mere 6%. And it's my opinion that in most of these instances management was asleep at the switch."

"How about manipulation by the labor union?" dug in Batt.

"The answer is still 'no,'" Ole emphasized. "Each CU is owned and operated by its own members. It's under the same type of Government supervision and policing as any bank.

"In flat figures," he went on, "48% of U. S. credit unions are under surveillance and auditing of the Federal Government, and 52% under eye of the states. It depends on the origin of the CU's charter. Furthermore, each officer of the local group who handles, or has access to, the CU's finances must be bonded."

"All right, all right," begrudged Batt. "Maybe I'm wrong about the labor unions. But still, Ole, you haven't proved that management gains anything through a CU set up for its employees."

"Well," replied Ole tolerantly, "when a credit union is established, garnishments can be ended, and also employees' requests for pay advances. How's that?"

Bertram Barnastian volunteered: "That alone, I'd say, amply justifies management's assistance with CU's.

"He was wracking his brain for ways to pay up—-and simply couldn't keep his mind on his job."

"And," Barney Hasbrook interjected: "I know from my own company's experience that a credit union builds employee morale."

"Swell!" snorted Batt. "Give 'em picnics, holidays, bonuses–and of course you make 'em contented cows in contented pastures. But do you get any more production out of 'em? In a pig's eye!"

Ole quickly refuted him: "As a matter of fact I can cite many examples of improved output. There's the case, for instance, of a skilled craftsmen who was known–by his carlier demonstrations–to be able to outproduce his fellow workers without sacrifice of quality. Yet now he was constantly falling under group average. You see, he was so involved in wracking his brain for ways to pay his 22 creditors–I repeat, 22 –that he simply couldn't keep his mind on his job.

"Then, through the help of the credit union his debts were consolidated. His creditors no longer pestered him. And with the pressure off, he expressed his relief in greater production. Actually, he increased his output over 50%. That netted him bonuses that almost equalled the payroll deductions required to meet his credit union loan. Today, he not only keeps out of debt, but he adds regularly to his savings."

"I call that a real break for management," Ed Strong commented. "And to borrow Batt's figure of speech, isn't that guy's work like the milk from contented cows–richer in quality and more of it?"

"Yes, employees thrift is a break for management," Ole assented. "The freedom from worry which accompanies thrift and security serves to cut down absenteeism."

"I still take it all with a grain of salt," Batt belittled. "Ninety-nine guys borrow, and one saves–isn't that about it?"

"Credit Union National Assn.'s 1956 report put savings of U. S. members at an average of $325 annually, while loans averaged only $250," Ole answered.

"What about repayments?" Bertram Barnastian queried.

"The record is remarkable," Ole replied. "Less than 0.2% of loans are not repaid." Then, snatching a glance at his watch, he said: "Before we break up, I want to point out one other CU asset for management. It frequently uncovers people with potential for management positions, and further serves as a valuable training ground for those already recognized."

"Hey!" Ed Strong protested. 'I want answers to my other questions before we get away."

"There are more angles, true enough," Ole quickly replied. "And my suggestion is that you get the literature on how to organize, charter, and operate a CU. Just write the Credit Union National Assn., 1617 Sherman Ave., Madison 1, Wis." —*End*

IVAN C. MILLER
"Food Engineering"

Each division has its own staff for helping bottlers put into action the marketing plan formulated at New York headquarters. But specialists from New York can be called in to help local firms analyze their markets, or shore up weak points.

Because the annual marketing plan is closely affected by what's happening in the field, the new setup streamlines the feedback of information to New York. There, the data is analyzed by market research and passed on to Durkee, who works it into the annual plan.

To make sure the new marketing structure will work, Pepsi will inaugurate one of the latest tools that is catching on with more progressive firms—the marketing audit.

For the present, the audits will be done by an outside firm. Durkee believes that since the checks will be confined to packages and prices, there's no point in building up a staff to handle something that may be tackled only twice the first year. Later on, he hopes to expand the audits to include all phases of advertising and merchandising.

The two audits should pay off for Pepsi, for soft drink packaging and pricing has gone through some topsy turvy periods in recent years. Behind the turmoil has been the drive to offset rising costs with bigger unit sales.

In the past three years, king-size bottles (10-, 12-, and 16-oz.) and family-size units (26- and 32-oz.) have appeared. And they've caught on as witness the fact that 20% of Coca Cola's domestic output is in king-size containers. In fact, some sources say the medium-sized bottles account for more than half of soft drink sales today.

Another aspect of the packaging upheaval is the canned drink. Nehi claims that the tins have helped to open new markets—such as steel mill vending. But Coca-Cola's Robinson, taking a dim view, says that "only about 2% of packaged soft drinks are sold in non-returnable cans (because) they're so expensive compared with the returnable bottle, and this higher container expense is such a large percentage of selling price that consumer resistance is a controlling sales deterrent."

A rash of price hikes in recent years has slowed down the per-capita expansion rate.

However, soft drink firms think the price increase phase is a thing of the past, and that the business pickup and normal weather will make '59 a bright year. And Durkee fully expects that a lot of that glitter will rub off on Pepsi. —*End*

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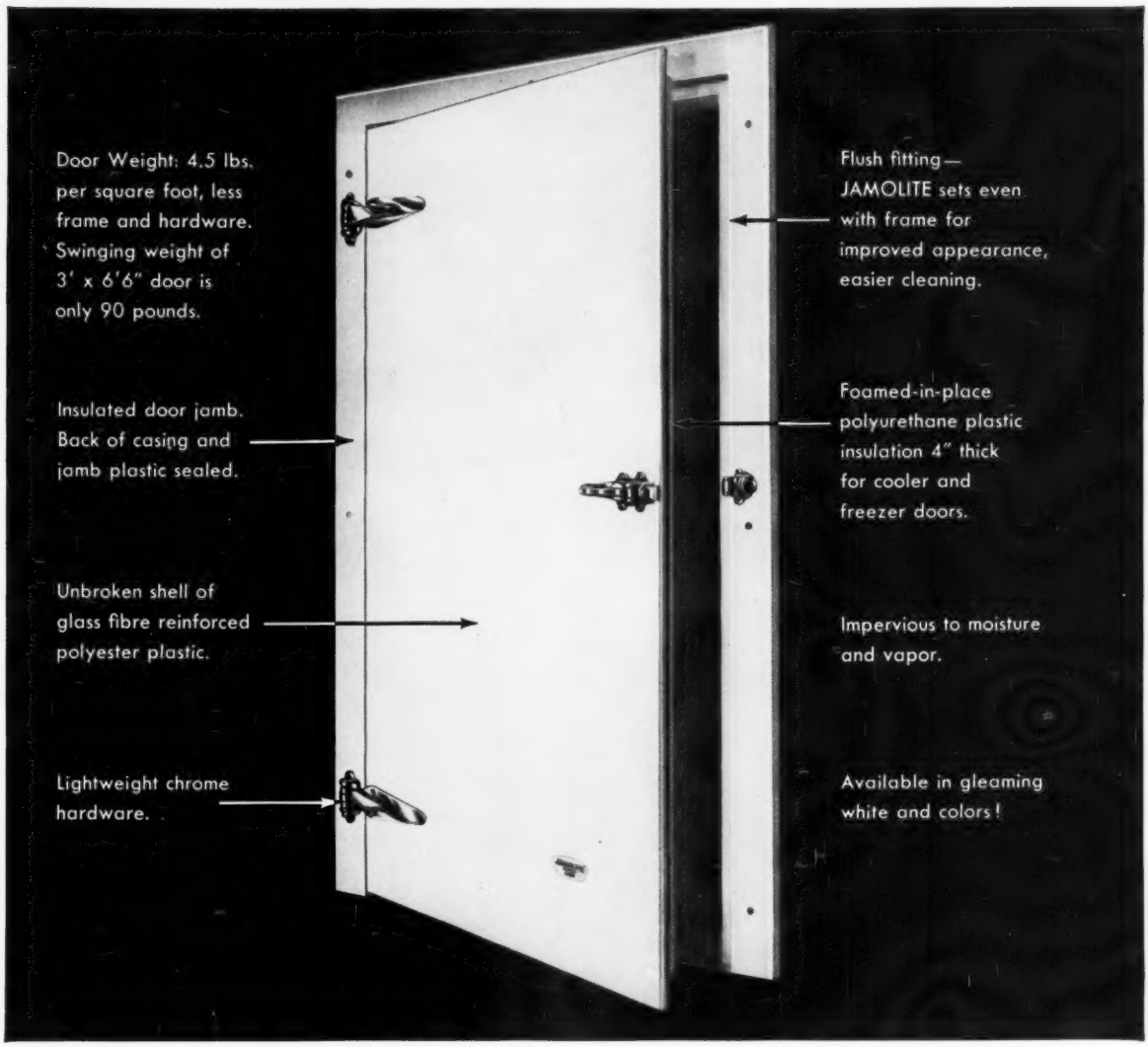
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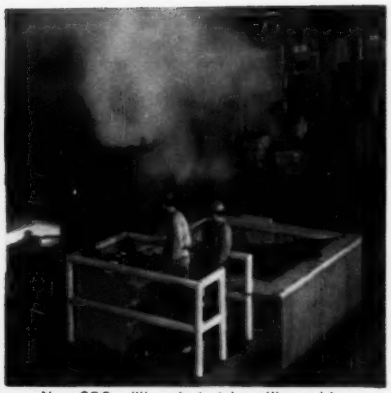

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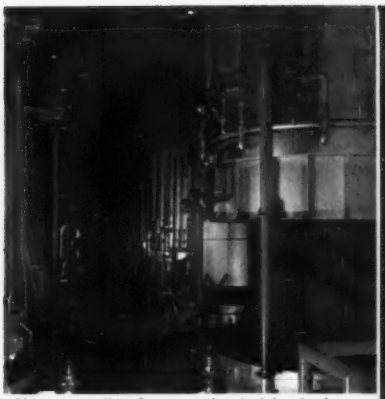
X-ray gage controls help regulate this cold reducing mill which operates at speeds to a mile-a-minute.



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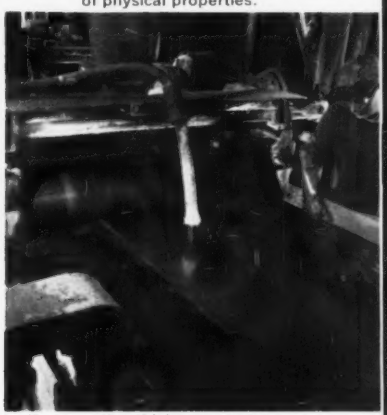
The temper mill kneads strip steel, then smooths it to meet hardness and surface requirements.

Electronic controls in J&L's No. 3 line coordinate fourteen separate tin plating operations.



X-ray coating-thickness gages assure tin coatings to a precision of ± .0000006 inches.

Enough tin plate for over 3.5 billion #2 cans

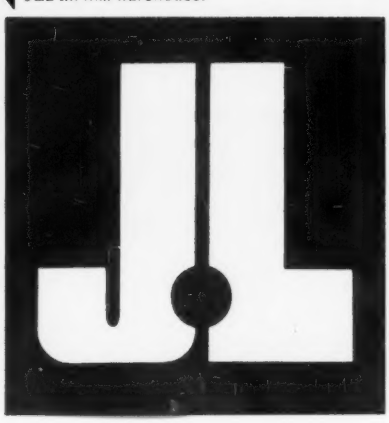
will be produced this year by J&L, who has invested over $42 million to expand and modernize its tin plating facilities since 1947.

Now—with an annual plant capacity of almost 600,000 tons of tin mill products and with almost fifty years experience as a leader in the field—the new J&L is equipped to deliver a product and service which are unsurpassed in the industry.

Jones & Laughlin Steel Corporation

PITTSBURGH, PENNSYLVANIA

◀ J&L tin mill warehouse.



Automatic pin-hole detector examines sheet tinplate for pinhole defects in the coating down to .001".

A 15,000-lb. coil leaves the line at Aliquippa, Pa., ready for packaging and shipment to a J&L customer.

Using Salt Efficiently

by INTERNATIONAL SALT COMPANY, INC.

How Flow Characteristics of Salt Affect Storage and Feeding Designs

If you're planning to install new salt-storage and brine-making facilities or enlarge existing ones—or if you'd like to make your present setup more efficient—here's information that can help you.

Referring to the table, you will note that most sizes of Sterling Rock Salt commonly used to make brine have an angle of repose of 32° from the horizontal. But the angle of slide for salt on chute materials differs according to salt size and the material used. This angle ranges from 20° for smooth glass, plastic or highly polished steel to 54° for sawed wood or rough concrete.

These two principles of salt flow influence brine-making installations in three distinct ways: in storage-bin design, in computing the minimum slope for salt-feeding chutes, and in determining the proper clearance between chute opening and the salt dissolver.

1. Storage-bin design. It is sometimes thought that a salt-storage bin placed above a dissolver should incorporate a sloping hopper, so that salt will flow out freely through the opening in the bottom. This extra expense in bin construction, however, may not be necessary. The angle of repose guarantees that salt, as it pours through the discharge opening in a flat-bottomed bin, will form its own sloping bottom. What's more, the salt that doesn't flow out on its angle of repose will remain in dead storage for use in emergencies.

2. Slope of feed chutes. In some plants, local conditions make it impractical for an overhead storage bin to be exactly above the dissolver. No matter. Rock salt's varying angles of slide permit continuous salt flow in *sloping* chutes. Though a standard 45° slope is recommended because of its built-in insurance against clogged chutes, flatter slopes are possible with certain chute materials. See table.

3. Chute-to-dissolver clearance. The constant 32° angle of repose for the larger sizes makes it possible to determine just how much clearance there should be between chute opening and dissolver, to insure a full dissolver at all times. Your Sterling representative can supply data for different chute and dissolver diameters.

SIZES OF STERLING ROCK SALT	NO. 2	NO. 1	CC, A, C	FC
ANGLE OF REPOSE Salt on Salt	32° ± 2°	32° ± 2°	32° ± 2°	47° ± 6°
ANGLE OF SLIDE Glass; Smooth Plastic; Highly Polished Stainless Steel	20° ± 2°	21° ± 2°	21° ± 2°	30° ± 6°
Carbon Steel with Smooth Mill Scale; Medium-Polished Stainless Steel; Monel Metal	28° ± 2°	29° ± 2°	29° ± 2°	37° ± 3°
Carbon Steel (Heavily Rutted and Pitted); Smooth-Planed Wood; Smooth Concrete	29° ± 2°	31° ± 2°	33° ± 2°	44° ± 3°
Rough-Sawed Wood; Rough Concrete	38° ± 2°	41° ± 2°	41° ± 2°	54° ± 6°

Table gives Angle of Repose of salt on salt and Angle of Slide on various surfaces for several crystal sizes of Sterling Rock Salt.

Further data on rock salt characteristics is contained in a free booklet, "Brine for Today's Industry." This comprehensive booklet also has valuable technical information on many aspects of storing, handling or using salt. Send today for your free copy.

50 years of salt experience can benefit your company. From 50 years' field experience and a continuing research and development program (the first ever established in the salt industry), International has accumulated an unequaled amount of technical data on salt—its production, properties and uses. Our engineers will be glad to make this information available to you without charge. They can also help you select the right salt for your needs—from the complete line of premium-quality Sterling Rock and Evaporated Salt. Contact your nearest International Salt Company sales office, or write to us direct.

International Salt Company, Inc., Scranton 2, Pennsylvania • Sales Offices:

Atlanta, Ga.	Chicago, Ill.	Memphis, Tenn.	Philadelphia, Pa.
Baltimore, Md.	Cincinnati, O.	Newark, N. J.	Pittsburgh, Pa.
Boston, Mass.	Cleveland, O.	New Orleans, La.	Richmond, Va.
Buffalo, N. Y.	Detroit, Mich.	New York, N. Y.	St. Louis, Mo.

Service and research are the extras in

STERLING SALT

INTERNATIONAL SALT COMPANY, INC.

For more data, circle 284 on Reader Service Card

LOOK *for new ways to prevent spoilage*

WELADYNE®

FEATURES OF TAMED IODINE AGAINST OTHER TYPES OF DISINFECTANTS	Chlorines	Quats	WELADYNE
Microbial Activity	Very short	Variable	High
Stability	No	Yes	Yes
Cost in Use	Low, but require frequent application.	High	Very low.
Odor	Heavy and penetrating.	None	Very light and non-lingering.
Cleaning Ability	None, cause bleaching.	Poor, inactivated by soaps.	Good
Microbiology	Selective germicide. Will not destroy a wide range of organisms.	Selective germicide. Will not destroy a wide range of organisms.	A nonselective germicide. Kills bacteria, virus, molds, fungi, yeast, spores, etc.
Affected by Hard Water	No	Yes	No
Indicator of Bacterial Efficiency	None	None	Color
Effect on skin, full strength	Irritants	Sensitizers	Nonirritating
Toxicity	Yes	Variable	No

EXTRAORDINARY NEW GERMICIDE

WELADYNE is a new "Tamed Iodine"® germicide for food plants. Its advantages for the reduction of spoilage are extraordinary. Nonselective biocidal activity. Lack of toxicity. A detergent action that eliminates separate cleaning. Extremely low cost. And more, as indicated above.

WELADYNE offers greater germicidal capacity than other germicides. As shown by tests on common pathogens. It is quick acting, long lasting. Destroys bacteria that cause odors and spoilage. Inhibits their reformation without residual carry-over of odor or flavor.

WELADYNE, with its "Tamed Iodine" advantages, costs less than 2¢ a gallon at general-purpose use dilution. It has an unmatched history of scientific evaluation and success. Why not use it as a hand dip and for general housekeeping throughout your plant? We'd be glad to supply a sample and full information. Just call your local West office. Or send the coupon below to our Long Island City headquarters, Dept. 60.

☐ Send a WELADYNE sample and full information.
☐ Have a Representative call.

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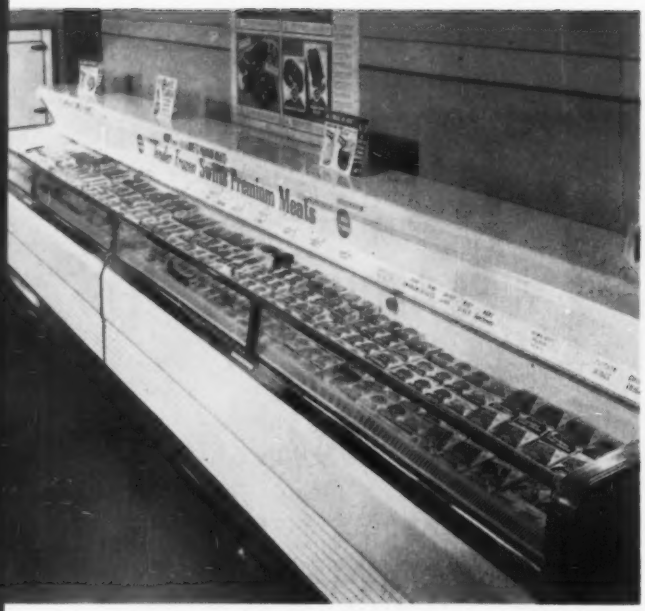
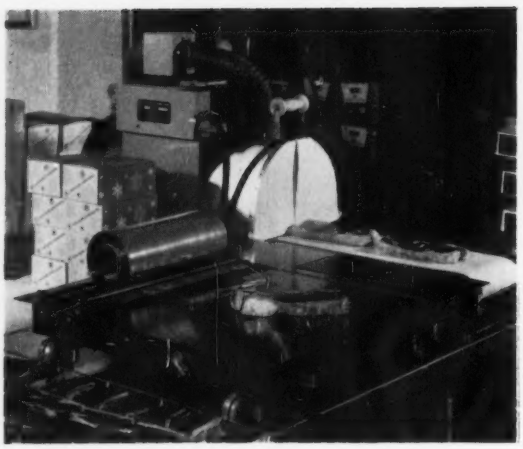


DAY IS DISTANT when the general retailer will sell frozens in an array like this. Major problems are pricing, mass output, and consumer education. (Swift photo)



HOME-FREEZER MARKET does grow more inviting. So Armour offers convenient multipacks. Wrapped in Cryovac, cuts go through heat-shrink tunnel to snug-fit film, then are packed in attractive boxes (Armour photo)

FE Roundup

Whither Frozen Meats?

TO GET a realistic gage of frozen meats—checking how far they've come and prognosticating how far they're likely to go—requires focusing on many factors.

The details come clearer by tracking back from this broad summary:

▶ **In the restaurant and institutional field, frozen meats are making some headway.**

▶ **On the primary retail level, however, they haven't "caught on"—in fact, the day of their success is distant.**

Present frozen-meat volume is only some 3% (or $200-plus million) of total meat production. Future estimates: Only 3-5% by '60, 8-15% by '65.

Outstanding retail-trade roadblock has been the matter of price. More is asked for the frozen cuts because they are fully trimmed. Thus, conventional $1-per-lb. T-bone steak and hip-bone sirloin may run up toward $2-per-lb. in the boneless lean-meat form.

This is only accounting the value of edible meat. But the housewife balks, generally seeing only the higher tag. Moreover, the retailers—already tight for frozen-cabinet space—also balk, because frozens offer them less pricing flexibility. They believe that the initial trial with frozen red meats has failed.

Demand hasn't burgeoned to form a solid basis for the mass production and the advanced processing of frozens—which would work to bring down the price spread. And all told, the bright prospects lie only at the end of a long road of consumer education, teamed with costly long-term advertising, and linked with new aggressive merchandising by the distributors.

JOHN V. ZIEMBA
Associate Editor, "Food Engineering"

Tactics of Big Packers

In view of the situation, the moves of big packers are significant.

Swift has streamlined its frozen portion-cut meat line to seven items in a new wrap (loin lamb chops, beef rib roast, sirloin strip steak medium, the same steak thick, butterfly pork chops, pork roast, and half lamb leg). Here, re-orders were the criterion—the nod being given to products that showed up best.

Armour earlier offered individual-consumer frozen red meats. But it discontinued them after six months and now has launched "Pre-Portioned Meats" in their place, initially targeting selected market communities in the midwest and on both coasts. This special campaign (detailed in our accompanying panel) brings a new tactical approach to the frozen-meat problem, hence is being watched with great interest.

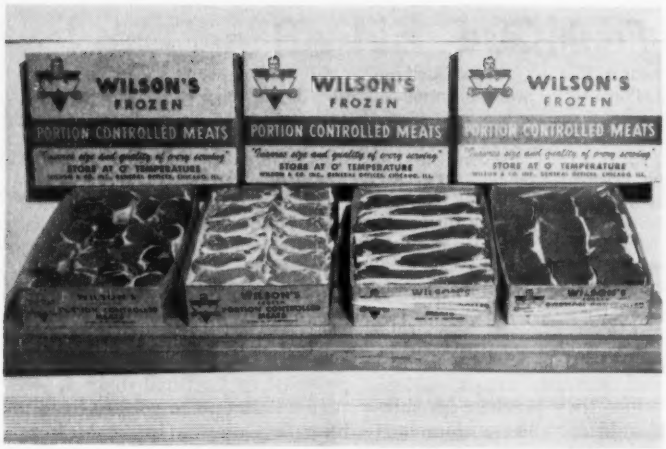
Price and Cost Factors

Frozen cuts can remain fairly stable in price. However, fluctuations in fresh-meat prices quickly warp the price spread. Packers, of course, must price at time of freezing to get their margin of profit from all cuts.

Obviously, retailers will maintain their price-wise advantage until a majority of meats are frozen and so bring packers into a more flexible merchandising position.

Retailers don't see how they can justify the expense of freezing meats at store level, in view of high distribution and labor costs.

Centralized pre-packaging of frozen cuts might lower costs, but here there's the problem of economically recovering byproducts. And mean-



INSTITUTIONAL PACKS have done the best, since food-service operators like the portion-control feature. Left to right: Tenderloin steaks, pork chops, strip steaks, and top sirloin butt steaks. (Wilson photo)

Despite bright early anticipation, our checkup finds them running only some 3% of total meat output. And tough problems block road ahead . . . Institutional sales come easiest

time, retailers remain divided as to whether centralized operations would really be the answer.

In some cities, union factors have blanked out retail sales of frozen cuts not processed and packaged at store level. However, there has been some easing of the pressure in Chicago relative to sales of convenience items.

Given a mounting demand for frozen cuts, packers will go all out to lick the mass-production problems and they will establish adequate plant facilities to turn out full lines in volume. A few will certainly continue missionary work meanwhile.

On the processing level, there have been some reductions, however small, in price-spread between fresh and frozen. At this specific stage, of course, additional costs are incurred in cutting, packaging, freezing, and shipping. However, the advantages that frozen meats offer packers—such as reduced storage space and labor savings—work to offset these added costs. As stated, future significant reduction will come from volume production, and it will more than compensate for the cost of freezing.

Freezing permits packers to utilize the entire carcass in a diversified manner at production level. It saves shrinkage losses and freight costs on fat and bones. It avoids sacrifice sale of carcass cuts at branch-house level. Trimmings from the meat-cutting can be put to better use, as in sausage products or certain canned meats. Fats can be rendered, and bones shipped to fertilizer factories.

There is already effective mechanization in the spheres of carton forming, overwrapping, stuffing, forming, slicing, freezing, and conveying. Preparation of specialty products, too, has been automated with advanced forming and dipping machines (for breading and tenderizing). But most meat cutting is manual, and items must still be hand packed.

Packers of frozens don't believe that they are pricing themselves out of the volume market.

5 Processing Problems

To advance the frozens in the production phases, packers must—

1. Spread preparation. Once orders reach volume, there would be need to mechanize handling, cutting, and forming. Thus, present high labor and processing costs in these steps would be slashed.

2. Freeze economically. Installations for freezing are costly, and their amortization is long-term. But the trend must be away from manual-batch and toward the continuous high-speed freezing, with accent on flexibility and production capacity.

3. Mechanized packaging. A large investment in carton-forming and overwrapping machines, as well as conveyor systems, is indicated.

4. Improve shipping. Facilities for less-than-truckload and less-than-carload frozen-food shipments are too few and too costly. Also expensive are special product-protecting containers and dry ice refrigerant.

5. Reduce storage costs. Holding frozen meats in storage warehouses can run up big bills. And at this stage of development, it's difficult to predict sales and thus initiate storage-avoiding movements.

Easing wholesale and retail mark-ups could aid promotion of frozens, but no true swing in this direction has been noted. Desire of top management in retail chains to push frozens is not always shared at lower levels. Meat buyers and cutters can be slow in changing their thinking on pricing and selling frozens.

In the institutional trade, however, there is some indication of distributors "smoothing the accounting" A number have discontinued percentage mark-ups, instead using per-case dollar-and-cents figures.

As for the packers, since they're not operating profitably on the frozens, they can't lower their own mark-ups at this time.

Relative to the last point is the fact that the meats are pre-trimmed. Moreover, the prepared frozen specialty items may be pre-tenderized and breaded. And some need only be heated in the package.

Still, drawbacks are cited other than that of Mrs. Housewife paying more for the frozens without knowing how old they are: If she holds them excessively long, they're apt to lose some of their flavor (from drip) and eventually may show evidence of rancidity. Also, really heavy cuts such as roasts need some thawing to get cooking heat into them.

One packing company ran a survey on buyer reaction to its frozen specialty (convenience) products, and it found that half the customers who tried any of the items (four were checked) made repeat buys.

On the other hand, only half of a sizable group of women inter-

Selling Them From the *Fresh* Case

Armour's most recent strategy in the frozen-meat battle: Ten-pound institutional-size cartons – "Pre-Portioned Meats" in 35 varieties–are moved to retailer, who then tray-packages items in any desired variety of quantity choices, and purveys them in his *fresh-meat* case.

This way, (1) products don't require premium space of frozen cases, (2) are sold as "conventional meats" (not differentiated as frozens), (3) retailer retains flexibility of packaging, (4) he keeps his meat crew at work (a factor in areas where there might be union opposition), and (5) by use of stickers, meats carry Armour brand identity.

As for shelf-life in the fresh-meat case, Del B. Love, head of Armour's Frosted Foods Div., points out that the frozens will remain in the hard state for a lengthy period, thus proper handling will insure the routine.

Relative to housewives questioning defrosted cuts, he quotes USDA Bacteriologist W. Sulzbacher: "There is no indication that frozen meat becomes more perishable after thawing than fresh meat." Further, he cites a Pennsylvania State U. finding that, "Meat which was thawed in the unopened package had from two to three times the keeping quality of unwrapped fresh meat."

viewed realized that no thawing was required before cooking these regular-size cuts–despite package instructions to cook in the frozen state. This again poses a big consumer-education job.

As for packaging, the transparent wrap isn't generally recommended for frozen meats. The darkness of these products and the ice crytsals are considered unattractive. And those improperly frozen and handled show freezer burn. As a result, packers usually settle for opaque covers–which have the added advantage of protecting the meats from light discoloration. Commonly used are standard size cartons that provide rigidity, easy case packaging, and display features.

Will Take a Lot of Doing

Yes, the products are most promising. But to build a wide, profitable market for frozen steaks and roasts will require continuous, aggressive promotion and advertising. For this development poses a radical departure from deeply ingrained buying habits at trade and consumer levels.

Right now, the best sellers are the lower priced cuts. And as for the items that move slower, size as well as price can be a factor (for instance, the large roasts requiring lengthier cooking).

However, one packer feels that the chances of roasts and other heavier cuts catching on are excellent–given good dollar support for consumer education, larger and better production and distribution facilities, and promotional help from retailers.

One frozen meat packer thinks that the best way to distribute to the institutional trade is through promotion by its own sales force, then shipping via jobbers or frozen food distributors. Certain large institutional accounts are served directly when they purchase in sufficient quantities. These shipments are made in low-temperature mechanically refrigerated trucks or are carried in conventional vehicles in round lots protected with thermo-blankets and dry ice.

Frozen specialty meats appear to lead the way. Reason: They're so different from red meats that retailers and consumers don't directly compare them with the fresh items.

Questions are still to be resolved. One packer believes the best way to distribute frozen red meats for retail trade is through a broker-and-distributor setup–not through the packer's own sales force.

Packers would like to see distributors back frozen meats with sufficient merchandising to help lift volume to a sizable cost-reduction level. Instead of taking a "create-a-demand-and-we-will-stock-them" attitude, retailers should, in the packers' opinion, provide the case space to give the items initial solid footing.

Most effective promotion of frozen meats, say some packers, will be through store demonstrators, working with suitable supplementary material. As with any new product, this program, they say, must be carried out continuously.

It's doubtful, however, that packers can conduct the needed broad, long-term investment programs single handed.

One packer uses direct mail to help make the housewife more frozen-meat conscious. Further, dieticians and home economists are available to go before women groups with talks, films, and cooking demonstations. It also uses newspapers, radio, and TV media.

At this stage, frozen meats appear to move best in larger stores, especially those in the fair-size towns. But an extensive survey made by a large Midwest distributor points to a good potential in the small stores as well.

In an attempt to get first-hand information on the future of frozen meats, one large packing house carried out a country-wide survey among both small and large retailers. After reporting that it received "varied answers" on frozen meats, it went on to say that, generally, the fresh meat people were not overly optimistic, whereas grocers were strongly in favor of them. However, there was no large-scale resistance.

This packer approaches food-store executives with the convincing sales argument that frozen meats: (1) eliminate production losses through spoilage, shrinkage, and markdown; (2) reduce labor and handling costs, since packers trim, bone, and package; (3) avoid errors in cutting, weighing, and pricing, and (4) make more profitable use of store selling space.

Institutional Packs Gaining

Frozen cuts have gone over best in the institutional field, mainly because here the food-service operators are better informed on the basic values of frozen meats and are quicker to accept new items. Also of major importance is the fact that the institutional market is free of key problems encountered in the retail field (as lack of frozen-meat cabinet space).

Institutional-type cuts pay off by: Eliminating guesswork on portions, providing accurate portion-cost control, simplifying menu planning, reducing meat-preparation labor (no boning, cutting, trimming), abolishing waste and shrinkage, offering better inventory control (more flexibility of carrying extra stock to meet unexpected demands), doing away with meat-fabricating equipment, simplifying storage requirements, eliminating storage shrink, bettering sanitary conditions, and offering conveniences like breading and tenderizing. —*End*

Broker Can Be No. 1 Ally

Each geographical area has its own challenges. Here's how the local marketer helps you choose—and maintain—the right approach

Paul W. Sayres

HIGH COSTS of failure in new product introduction and territorial expansion will make manufacturers rely increasingly on food brokers as a form of marketing insurance. But the pay-off is there only if brokers are made full-scale partners of the manufacturer's marketing team.

So reasons Paul W. Sayres, head of one of the nation's largest brokerage firms (volume handled in '58: $50 million).

Continuity of contact with all-important buyers, specialized knowledge of local conditions, and prefigured sales costs are three of the advantages brokers offer food marketers, Sayres stresses. And, he adds, these factors will gain in importance as competitive conditions make each marketing area strikingly different from the next one.

The manufacturer's branch manager (if he's worth his salary) moves from territory to territory with each promotion up the company ladder. This means he must start afresh with each shift, Sayres says.

On the other hand, reasons Sayres, the broker steadily expands, over the years, his buyer-contact sources, welds closer ties with them, and hones his sensitivity to local trends. Thus, he builds up that specialized knowledge of local conditions.

The broker's fixed commission gives the manufacturer a handy tool for computing sales costs in a given area, Sayres contends. He says that brokerage payments today run from 1% to 10%, depending upon product turnover and retail work involved, whereas costs for the manufacturer's own sales force range from 3% to 15%.

You'll profit more from brokers, this expert maintains, if you make them integral parts of your marketing team—even to the point of seeking their advice on something like media and time selection for an advertising campaign. Being a sales specialist in his own bailiwick, the broker can alert you to the selling techniques, product features, and advertising themes that will be most productive in a campaign.

Since the quality of the advance preparations often makes or breaks a merchandising campaign, brokers should be in on the advance planning, Sayres insists. Here, the broker's staff can do much of the preliminary legwork by surveying competition, retailer and consumer preferences, price and quality differentials, and potential volume.

To put a sales campaign on surer footing, Sayres advises this four-point program:

"1. Time your opening shot. Don't break with your advertising, prematurely, until all the preliminary legwork, and the attainment of distribution has been achieved.

"2. Coordinate advertising and promotion. For the all-important identity of product, package, and message, it's axiomatic that the basic advertising theme be integrated with in-store promotional aids.

"3. Be Honest about your product. Over-promising the product's virtues works, in the end, against you, not for you.

"4. Be patient in judging results. Many firms, in their eagerness to gage results, fail to allow sufficient time for repeat business to develop, or for their product to meet—and overcome—competitive countermeasures that are bound to arise."

One significant reason behind the greater use of brokers is their radical transition from order takers to complete sales service. A look at the Sayres organization gives an idea of the scope.

Once buyers are contacted, retail staffers take orders, make arrangements for promotion material, stimulate dealer cooperation, and work up tie-ins with related items. Also, they set up displays, stock and seek preferential shelf space, check inventories, restock and rotate merchandise when necessary, and even discuss products with customers. —*FE Staff*

SAVE UP TO 50% OF YOUR PRESENT COST ON MEAT EXTRACT

Join the many food manufacturers who have cut their costs without cutting flavor. Instead of paying high prices for *all* the meat extract you need, use Vico meat extract substitute and extender. Every pound you use will save you more than 75% on the current market price for meat extract. Many food processors have substituted as much as 75% without changing the flavor of their product. Vico meat extract substitute and extender is excellent for soups, gravy bases, sauces—even adds flavor to processed meats. Contains highly nutritive amino acids and Vitamin B Complex factors. And its price doesn't fluctuate with the market. Also available with *natural* hickory smoked flavor. Chemical analysis on request, or

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Hauling fruit from grove to processing plant, these Macks work day-in, day-out for Minute Maid Corporation.

Frozen sunshine on the move

On 1,000-mile highway express runs, Minute Maid Corporation counts on Macks for economical, round-the-clock deliveries.

Hauling high-tonnage loads of fruit out of sandy groves and to the processing plants . . . fast over-the-road deliveries of frozen concentrates to distant cities. Dependable, on-schedule performance of this operation for the world's largest producer of frozen concentrates becomes routine when Mack trucks are on the job.

Mack trucks on the job reduce hauling expense because only in Macks are combined the proved cost-saving advantages of famous Mack Thermodyne® engines and the long-lived efficiency of other Mack-built components. Only because Mack builds all its own vital components can it maintain the most rigid quality control of any heavy-duty truck manufacturer in the industry.

For more miles per gallon, less downtime, stand-out performance . . . Mack has the unit that can reduce your operating costs. Your local Mack branch or distributor will be glad to explain in detail which Mack will best suit your requirements. Mack Trucks, Inc., Plainfield, New Jersey. In Canada: Mack Trucks of Canada, Ltd.

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CASE HISTORY OF MONTH

From files of *National Consumer Panel Division* of *Market Research Corp. of America.* Material is factually correct. Identities of product and companies has been masked to insure anonymity.—The Editors

How Effective Are TV "Spots"?

Management's problem

AS PART OF OUR overall advertising activity last fall, we bought a series of TV spot announcements in certain markets. The commercials all ran on Friday afternoon, but not in consecutive weeks. Now, to help us plan this year's advertising program we want to find out how this television campaign affected consumer purchases.

WHAT WOULD YOU DO?

Management's decision

Two special analyses were made, using data from the purchase records of families who are in the National Consumer Panel.

1. Purchases made during the three-month period in which the TV "spots" appeared were compared with those made during the same three months of the preceding year, when there was no television advertising of this kind.
2. Purchases of families who bought on the days following the TV commercials were checked for 18 months prior to the start of the television series.

Result of action

Findings showed that the four poorest sales weeks, compared to the previous year, were those in which no commercial was televised. Moreover, the best three weeks were all "TV weeks."

The impact of television was further revealed by consumer buying activity on the days following a commercial. For this measurement, the "TV weeks" were compared with non-TV weeks in the same three-month period.

On the Fridays, Saturdays, and Mondays following a commercial, purchases were higher than on the same days of non-TV weeks. By Tuesdays, however, this trend was reversed.

In analyzing the buying history of families who purchased on post-TV days, it was found that many of them had previously been very heavy users of the product.

Conclusion was that TV "spots" had definitely been a sales stimulant, especially on the day of the commercial and the succeeding Saturday and Monday. Further, it was apparent that the commercials served to remind former heavy users of the product to buy again.

On the other hand, there was no indication that the spots had succeeded in attracting a signficant number of new users of the product.

These findings were of considerable help in making decisions about the type of advertising activity to be used in the forthcoming period.

For more information, write to Case-History Editor, FOOD ENGINEERING, 330 West 42nd St., New York 36, N. Y. Your inquiry will be directed to the source of the case-history item.

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Rotor Lift
Help You
GEAR UP '59
In...
For BETTER
PRODUCTION
Food manufacturers must increase production efficiency to capitalize on the rapid increase in family units expected during the early 1960s. ROTOR LIFT elevating and conveying is the answer.
ROTOR LIFT, original and finest vertical screw elevator, handles all dry, free flowing bulk materials—
MORE SAFELY
MORE DEPENDABLY
MORE ECONOMICALLY
. . . Capacities up to 6,000 CU. FT. PER HR.
8
BASIC
TYPES
4 DIAMETERS
World's Largest Manufacturer of Vertical Helicoid Screw Elevators
Write for ENGINEERING CATALOG
SOUTHWESTERN
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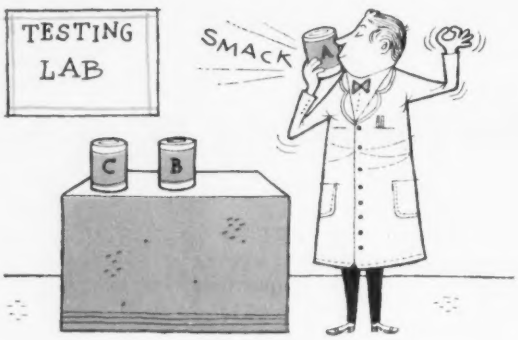
Two Popular Fallacies to Steer Clear Of . . .

. . . That most buying decisions are carried out rationally

. . . That lab-favored ingredients assure most sellable product



Your Real Cue Is *Buyer Behavior*

True "charting" of your consumers calls for sharpest closeups of their buying impulses. Here's how fact-digging helps you avoid common booby traps

HIGH COST of failures in new product introduction puts a premium on getting the facts that lead to the right marketing decision.

The need to eliminate guesswork in gaging consumer reaction to your product makes marketing research as vital as production research. Sharp marketing checks enable management to profit from the right kind of package change and the proper level of product quality.

First off, many manufacturers make the mistake of considering the consumer as a very rational being who weighs effects and consequences, measures costs and returns, and balances pleasures against pains before making a shopping decision.

Granted, to some extent consumers actually do these things. But a manufacturer who makes marketing decisions on the basis that these are the only sales-influencing factors that count may be caught short by declining product sales. Factors other than the "rational" ones often are the more powerful in determining the consumer's shopping decision.

For example, purchases based on price considerations are considered rational decisions. All other things being equal, the less expensive product should be the one chosen by the shopper.

But the "other things" are rarely equal. And price considerations may be altogether submerged by other factors.

WILLIAM BALSHEM
Senior Project Director, A. J. Wood Research Corp., Philadelphia

Down to Cases

Let us take an actual case—one concerned with the marketing of an instant powder that is added to water. Here, a leading manufacturer retailed his product—we'll call it Brand (A)—in a 3-oz. size. Meanwhile, another maker was selling both a 3-oz. and a 5-oz. size—call these Brand (B). This was the competitive picture relative to amounts, prices, and sizes—

Brand (A)	Brand (B)	
3 Oz.	3 Oz.	5 Oz.
29¢	29¢	39¢
3¼ x 2¼"	3 x 2"	3⅛ x 2⅛"

Now, it is "common knowledge" that, for some products, there is a marketing advantage in having a larger package than the competition—and note here that the Brand (A) 3-oz. item is of a bigger size than either of the Brand (B) offerings. However, some of the Brand (B) executives felt that consumers were primarily rational beings and that accordingly the price-per-amount advantage of their 5-oz. item would be enough to win the competitive edge where the consumer "got the true facts."

They staged a test survey wherein all brand identifications were removed and only the prices and weights were left on the displayed package samples. This is, to some extent, an unrealistic procedure, since it puts such extra accent on quantity and price—facts tending to be partly obscured by brand name, copy, and other elements making up the package design. If anything, this procedure *over-emphasized* the *rational* facts of the case.

Respondents were then allowed to examine the 3-oz. packages of Brands (A) and (B) and asked which they

HOW PUDDING NO. 5 TRIUMPHED
(Even Though "Ingredient Evaluations" Favored Others)

Pair Test	Preferred Pudding No. 1	No. 2	No. 3	No. 4	No. 5	Total
1 vs. 2	48	52	....	....	....	100
1 vs. 3	50	....	50	....	....	100
1 vs. 4	47	....	....	53	....	100
1 vs. 5	43	....	....	....	57	100
2 vs. 3	....	50	50	....	....	100
2 vs. 4	....	48	....	52	....	100
2 vs. 5	....	47	....	....	53	100
3 vs. 4	....	....	52	48	....	100
3 vs. 5	....	....	40	....	60	100
4 vs. 5	....	....	....	45	55	100
Totals	**188**	**197**	**192**	**198**	**225**	**1000**

thought was the better buy. In the test, 78% picked (A) and only 22% selected (B).

They were then questioned about the price and quantity for each (with both packages out of sight). About three-fourths of the respondents correctly named both prices and quantities. There was little doubt, therefore, that most housewives knew the rational facts.

But they didn't put the facts together to come out with a price per ounce. For the most part, they were influenced by the much-easier-to-see package size.

Now, what happened in the Brand (A) 3-oz. vs. Brand (B) 5-oz. comparison? As we've noted, the 5-oz. item had a considerable price advantage, although it was packaged in a slightly smaller container.

Again, housewives were allowed to examine the two packages and asked which one they would buy. Although the Brand (B) 5-oz. offering had an advantage of almost 2¢ per ounce, 44% still picked Brand (A).

The housewives were then asked —with the two packages out of sight —how many ounces were contained in each, and the price of each. Almost 75% of the housewives gave correct answers.

It was clear, therefore, that a majority possessed the facts. They had all the clues needed for a rational solution of the problem, but they did not put these clues together. Again, it was much easier for them to choose *purely on the basis of the obvious difference in container sizes.*

It must be remembered that the conditions of this research project tended to over-accent the quantity price factors, since they were the only features placed on the package samples. In the retail outlet, package size could be expected to play an even more important role because here the rational economic factors of quantity and price would tend to be shadowed by brand identification, color, shelf space, etc. And, in fact, Brand (A) was the leader in the market.

Research, in this case, was able to help management direct its effort toward a package change rather than costly product-change experiments, price reductions, a search for new copy slogans and themes, or a new advertising agency. The slight increase in packaging costs was easily absorbed by a pickup in sales and a slightly higher price.

On That "Quality" Question—

Another preconception, frequently met with among technical people, is that it is better to employ those ingredients that they consider superior. The argument is that, other things being equal, the consumer will prefer the product with the "better grade" ingredients.

This often results in a dispute between technical staffers (who want to put the "best quality" ingredients into the product, tending to push up the price) and management people (who are more marketing minded and thus may prefer to keep the price as low as reasonably possible).

In such a case, marketing research helps to determine the optimum product. It also helps to decide whether, in fact, the "highest quality" product is also the most preferred.

The following example, from an actual research study, serves to illustrate that the evaluation of the technical staff is not always the proper basis for making a marketing decision.

The manufacturer in question was bringing out a new pudding. Five different tests products, each made with ingredients of different quality, had been developed. No. 1 was of exceptionally "high quality" ingredients, No. 2 of somewhat lower quality—and so on down to No. 5.

These five products were distributed to respondents two at a time in such a way that all possible pairs of puddings were tested. For example, 100 respondents tested No. 1 against No. 2, 100 tested No. 1 against No. 3, another 100 tested No. 1 and No. 4, etc.

In each case, the respondents were asked which sample tasted better. They were also told that they could have a free sample of the one they favored. The ten pairs of tests were as follows:

1 vs. 2	2 vs. 3	3 vs. 4
1 vs. 3	2 vs. 4	3 vs. 5
1 vs. 4	2 vs. 5	4 vs. 5
1 vs. 5		

The results (see accompanying panel) showed that where puddings Nos. 1 through 4 were concerned there was practically no difference in preference. However, the No. 5 pudding—last on the "quality" scale—was preferred for its taste over all of the others.

Since the same retail price could be obtained for each of the varieties, it would have been silly to sell any but No. 5, especially in view of the fact that its taste was actually preferred.

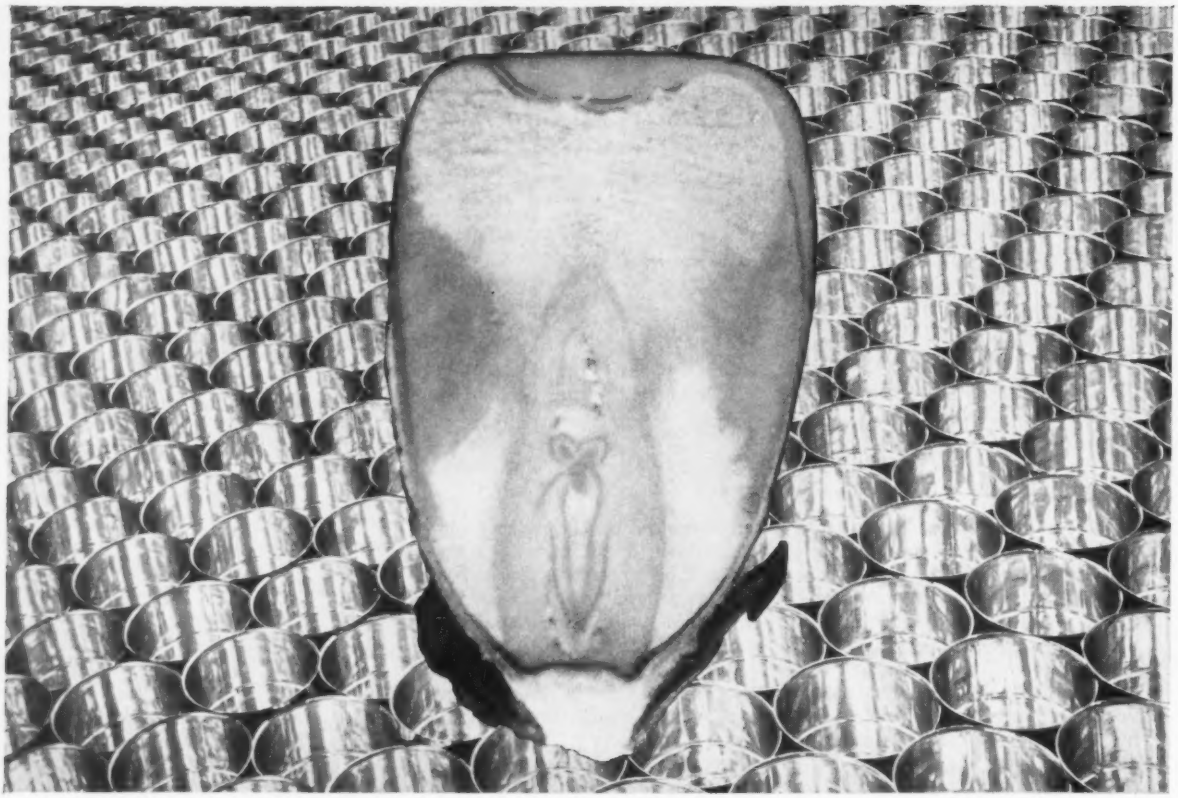
There is little point in advertising that you use better ingredients than anyone else in the business if consumers aren't pleased with the taste of your product.

Again, marketing research is able to help management arrive at a decision in the face of differing, and often contradictory, views regarding consumer behavior. Interdepartmental conflicts usually have as their basis different conceptions and estimates of the direction which consumer behavior will take under given conditions.

If these hypotheses can be made explicit, and if the circumstances can be made specific enough, marketing research can generally set up a plan or design of research by means of which a conclusion can be reached leading to decisions with the greatest chances of marketing success.

—*End*

SPECIAL STARCHES



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For more data, circle 289 on Reader Service Card

GF's 'New Leap Forward'

Following 1½ yr. of field testing in Boston, General Foods is expanding its new distribution-service concept to three other districts, and may project it on a national basis inside the next 2 yr.

Built around a network of "marketing warehouses" that bring all sales, order processing, and distribution service personnel under one roof, the system should answer the principal demand retailers make on manufacturers today—"Make your products profitable to handle, gear your service to lowering costs."

Among the program's salient features: (1) Individualized service enabling customer to quickly find status of his order and shipment. (2) Smooth scheduling that delivers right amount of goods in shorter time to customer warehouse. (3) Combining of orders from more than one GF division, enabling customer to get pricing advantage. (4) New pricing structure that more truly reflects actual costs.

Retailers and wholesalers in New England give the program an enthusiastic OK. They report lower inventories, less capital tieup, and smoother promotion storage peaks as their chief benefits.

Coupon 'Charity' Brings Second Look

Philanthropic retailers who let customers turn in coupons without purchasing the products specified have sparked GMA to take a second look at this charitable promotional technique. A special task group will update a 1955 GMA study, prepare a code of ethics for commercial clearing houses, suggest ways of simplifying handling-redemption methods.

Recent developments have heightened interest in the coupons, says GMA Pres. Paul S. Willis. Especially noteworthy is the entry of Chicago, New York, and California banks into the clearing house field, at a handling charge of only ½¢ per coupon. This rate, the result of shrewd banker thinking, contrasts sharply with retailer insistence that the manufacturers' 2¢ handling rate isn't enough.

Changing 'No Sale' to Dollars

Sell the idea first and you'll end with a bigger order. For, ideas on how to sell more are what open buyers' minds, advises Ian E. McLaughlin, sales training manager, California Packing.

Calpak's techniques follow these three simple steps, McLaughlin told recent meeting of Canadian Food Brokers Assn.: (1) Attention—get grocer to listen to you. (2) Benefits—show him visually (by means of photos or part of display material) how he can sell more. (3) Close—ask for the order.

Revamps Selling for More Impact

Aiming for greater sales efficiency, better customer service and faster flow of goods, Borden's has just completed a year-long reorganization of its marketing pattern.

New system, which unites former cheese and food products divisions into Borden's Food Co., is built around six territorial districts.

Key change involves having each salesman going into the big stores selling the company's whole line, whereas previously there was one man each for the perishables and non-perishables. Result is that each man carries more items but works a smaller area.

Distribution and traffic control, formerly centered in New York headquarters, will now be handled by each district.

Brews Confidence With Rivals' Java

"You can't sell a salesman the merits of your product unless he sells himself first." Continental Coffee makes this axiom pay off by having its salesmen sample competitive coffees along with their own product (under blindfold conditions) at each of 25 district meetings, held regularly. They then make out objective reports and use test results in their selling.

Also, the comparison tests serve as a field check on product quality, since the company grinds and roasts coffee at four scattered locations.

BRIEFS

More competition for processed citrus: Florida Citrus Mutual will push a low-cost home juicer to encourage greater use of fresh product.

How to plan and control ad expenditures will be theme of Assn. of National Advertisers workshop, Apr. 23-24, at Rye, N. Y.

New contender for shelf space: Restaurateur Frank G. Shattuck (Schrafft's) will test-sell own branded products in two New York City supermarkets. About 100 items will be sold from special Schrafft's counters.

Netherlands drops bars against American frozen poultry. Stores there are adding 250 to 300 freezer cabinets a month, says National Turkey Federation.

Third annual "Food Store Spectacular," Oct. 15-24, will have repeat support from Campbell, General Mills, Green Giant, Heinz, Kraft, Nabisco, Pepsi-Cola, 7-Up, and, for the first time, Schlitz and Interstate Bakeries. Sponsors are Nargus and "Satevepost".

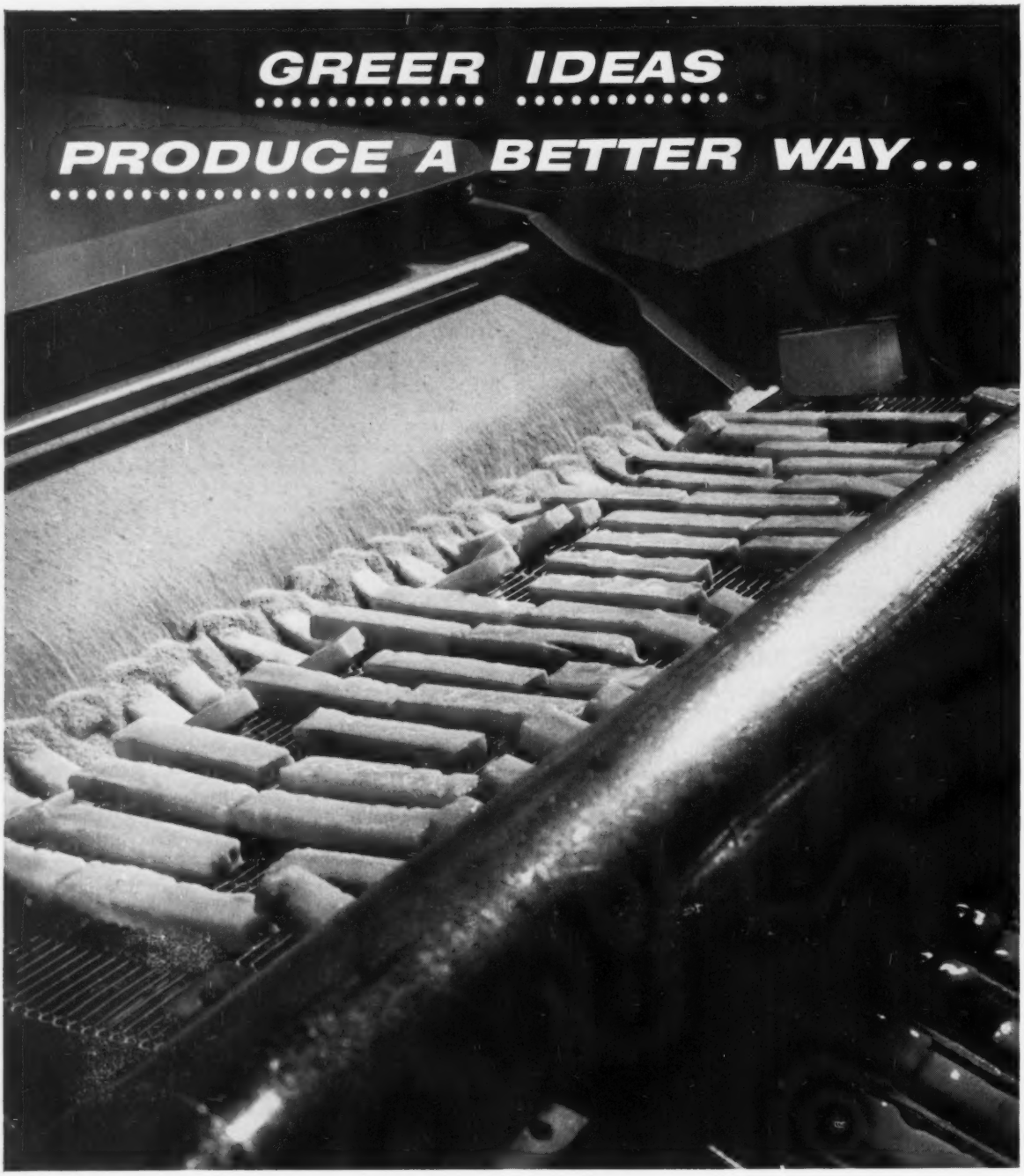
Expansion in the retail field has been aim of recent Consolidated Foods' acquisition, observes L. F. Rothschild & Co. Processing and wholesale still accounts for 67% of firm's volume.

Warehouse network being built up by Quaker Oats will slash four days off time it takes to get goods to customers in some areas.

More evidence of new products' value: 50% of Lever Bros. volume is now in items debuted since '54. Further, half of Gerber's sales are in products brought out since '46.

Theatrical showmanship of pizza chefs is paying off. Pizza sales are seen reaching $500 million this year as Americans down an estimated 50 million of the pies weekly.

Volume potential of outdoor cooking is indicated by sales of grill manufacturers—estimated as running to $100 million last year, and expected to triple in '59.



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BRINGING BETTER FOOD TO MORE PEOPLE AT

...for GORTON'S

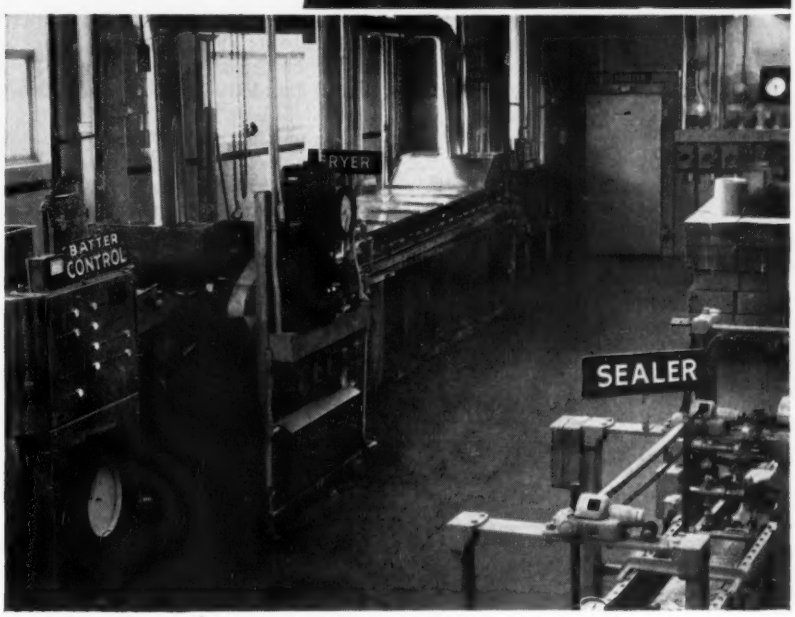
of Gloucester

"Gorton's has quadrupled the production of their government-inspected fish sticks in just five years!" says Dick Watson. "Greer has played a real part in this growth, with ideas and machines that help them turn out a better product at lower cost. And when Gorton's recently added a new production line, they came to Greer as they had five years before.

"With a Greer Multi-Tier Conveyor carrying the fish sticks through a continuous blast freezer, Gorton's has virtually eliminated labor in the freezing process. And by freezing before packaging, they get a more attractive product, and one that can withstand a new labor-saving packing technique. The Greer Fry-O-Pac Breader has further cut labor costs while it doubled production and cut culls in half. Furthermore it saves Gorton's a really substantial amount of breading material every shift.

"We think results like these are typical of what we can accomplish with our broad experience in food processing and our engineering skills . . . integrating standard Greer equipment with new custom designs — to produce a better way!"

Richard Watson,
Greer's Division Manager for
Food Processing Equipment



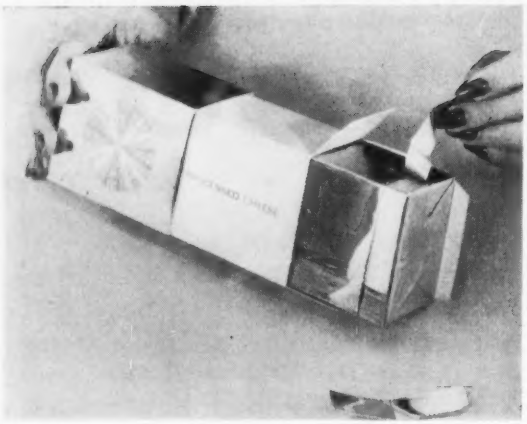
Product moves from left — through batterer, breader, fryer and cooler — to freezer in background, then doubles back through packaging line just off right.

GREER

LOWER COST

For more data, circle 290 on Reader Service Card

CHALLENGE: Packages designed only for visual appeal lose out in hectic store, where shoppers are hurried, shelves jammed.



ANSWER: 'Concept' container, such as this telescoping cheese unit that's keyed to storage problem.

3-D Packaging—New Sales Tool

Your container needs more than visual appeal to survive in supermarket 'jungle', suggests this leading authority . . . Needed is a third dimension—'concept' packages—to make your product unique

THE TYPICAL PICTURE depicts the supermarket as a place that is a sort of shoppers' paradise. For consumer, retailer, and manufacturer alike, this paradise offers an ideal location in which to display and purchase a thousand and one different items.

The store is large and expansive, the aisles broad, and the gaily lined shelves beautiful. Packages and products appear in striking display, lined up one beside the other, all clearly visible, and all competing with each other for the consumer's attention. Sometimes there is a musical background.

It is for this atmosphere of relative relaxation and visibility that we have all been designing packages, presuming that the stronger they are in visual appeal, the better are their chances for being sold.

But is this really true?

Recently, we made a movie to show what actually goes on in a supermarket during the peak hours of Friday night and all day Saturday (the period during which some ⅔ of all transactions take place).

When the movie was finished and we all sat down to watch the film, there was not one of us who wasn't surprised (although I suppose our wives could have told us all along).

HARLEY EARL
Harley Earl Associates, Detroit

This, in brief, is what we saw: The average supermarket on a busy day is definitely not a shoppers' paradise, nor does it represent the millenium in ideal selling conditions.

The parking lots are jammed—too little space for all the shoppers. The crowds in the store are so large—hence disorderly—that near chaos prevails.

There is such a maze of signs, advertising, special deal offerings, and the like, that you can hardly find your way through them. The children run all over the place, and the clerks are constantly restocking the shelves, further jamming the aisles with their cartons and boxes.

Aisles are not wide enough to accommodate all of the shoppers, and lines at the check-out counters are long and unhappy. The general atmosphere is one of frenzy, impatience, and hurry. And the noise is overwhelming.

Hence, today's market place, far from being a heaven, resembles nothing so much as a commercial jungle with its own set of laws.

The consumer, baffled in this hodgepodge of prices and deals, is further confronted with such merchandising experiments as the self-feeding shelves. While these venders might do a good job of dispensing a product, they often hide its identity by turning the label away from the inquiring consumer.

Visual Appeal Not Enough

Despite all this, packages are designed as if they were always to be displayed under ideal conditions. What does this mean? It means that for the past ten years, intensive work has been done on the surface of the package only.

We have refined visual sales appeal to an almost incredible degree.

Complicated systems have been developed for the achievement of a family identity for a group of packages and a corporate identity for the whole line.

We have devised systems of stacking and created display patterns that 'come across' in mass groups.

Is all this enough for today's needs? I think not—and precisely because it deals only with packaging in a two-dimensional sense.

It is time that we added a *third dimension* to packaging. All these systems that we have developed are focused on one goal alone—getting the package seen and noticed.

But the present supermarket environment is such that many packages—no matter how well designed—may not be noticed at all. And it is for this reason that we must, through a new dimension, give the package something beyond mere visual appeal.

For lack of a better word, call this new dimension "concept packaging"—designing in terms of the total problem presented by both package and product instead of designing solely in terms of shelf visibility.

A package is basically a container. It can be many more things—a dispenser, a protector of the product, a utensil in which to prepare it and even to serve it.

In other words, we have neglected the functional aspect of the package and failed to realize that this aspect, if developed and refined, can become just as important—if not more important—a sales tool than graphic appeal.

How so? Obviously, the concept package isn't going to do any better as a *silent salesman* in a supermarket than the graphic package has been doing. If the condition in the supermarket is often so chaotic and disorderly that many of the packages can't be seen at all, then it's not going to make any difference whether they are concept packages or graphic packages.

I think, instead, that we are going to have to face up to an unpleasant fact: The role of the package as a silent salesman in the sales environment has been exaggerated. Until we succeed in building the "ideal shoppers' paradise" we must seek ways for the package to sell itself other than directly from the shelf.

The package will still operate as a silent salesman, because in most products today—especially in the food industry—the package is the product. Often, the customer may not be able to distinguish one product from another, except for the fact that it has a different kind of package.

And here is where the idea of concept packaging comes in. When you give your package a different form or you add to it an additional function, you are really making your package (and hence your product) unique and individual. This is the way to achieve true brand identity, and to create a true brand image.

The idea of concept packaging is still in its relative infancy. Its development has been stimulated by the many new materials, particularly plastics, which have literally demanded a new type of packaging.

Our firm, which developed a number of these concept packages for Alcoa, discovered that you have to go about package designing in a way that's entirely different from what has been done previously. You have to look at the package and the product as one, and try to create a package that will be in effect an *extension of the product.*

You have to study the product itself and figure out if there is any way in which the package can be used to preserve, store, prepare, or serve the product. You have to know the disadvantages as well as the advantages of the product, and see if you can overcome some of these through a new type of packaging.

For instance, in regards to cheeses, storage is one of the main problems. Housewives find that once they've used up some of the cheese, the package it originally came in makes a most unwieldy storage container.

One of the suggestions we came up with for cheese was the "telescoped" package, which contracts to a smaller size as the product is used up.

We also hit upon a rollback package where you simply roll the top of the package back as you consume the cheese. There are many other solutions possible. Once you begin to think of packaging in this way you will find that all sorts of ideas crop up.

Concept packaging has many advantages in addition to the fact that it gives you a stronger brand identity. For instance, it provides copywriters and advertising artists with much more sound and significant material on which to base advertising campaigns.

It is also much more likely to produce a real loyalty among consumers. The consumer does not discard the package once she brings it home. She uses it constantly and—if it is well-designed—she develops a real affection for it.

In short, the addition of this third dimension to packaging should bring about a unique combination of both visual and functional appeal. It might even stimulate the customer actually to go out and look for a certain package in the supermarket.

—*End*

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TRAY PACK: It Slashes Handling Costs

Smart trimmed-down shipper takes tedious labor out of Red Dot's packing and distribution. And goods are sped by the trayful onto store shelves or into displays

TOPS IN SIMPLICITY, the "book-end-like" packs are moved and loaded with new speedy efficiency.

FOR STORE DISPLAY they're also A-1—specially lending themselves (as above) to aisle setups.

NEWEST WRINKLE in shipping cartoned products is the corrugated-paper tray pack you see at left.

It's being used by Red Dot Foods, Inc., of Madison, Wis., for handling and shipping dozen lots of twin-pack potato-chip boxes, each holding two ½-lb. bags. And hailed are the following gains:

. . . **In productivity**—Speedier packing of a dozen boxes into a unit pack. Packers merely assemble boxes into top and bottom trays, then machine-tie the pack.

. . . **In trucks and trailers**—Easier loading and delivery to retail stores and chain-store warehouses. Route salesmen (who serve 35,000 retail accounts) easily carry four tray packs into a store in one trip. Private-label boxes are loaded ten tray packs to a specially designed dolly for full-truckload delivery to chain-store warehouses.

. . . **In warehouses**—Faster handling in and out. Tray packs of Red Dot boxes are loaded into semis going to company's 100 sales warehouses for reloading onto store-destined route trucks. Dolly loads of tray packs move via chain-store warehouses to retail stores. Empty dollies are returned to warehouses, then to Red Dot.

. . . **In stores**—Greater savings through handling of shelf and display goods by trayfuls instead of handfuls. Route salesmen cut tie-strings, remove top trays (that go back to plant), and stock shelves or set up mass displays of the pre-priced boxes in aisles—all in a jiffy. And private-label boxes, arriving at stores by the dolly load, are handled the same way.

Thus, store shelves are kept more orderly, better supplied. Aisles aren't cluttered with discarded bundling paper. Mass displays are arranged quicker, and floor space is generally saved here by skipping the old pyramiding of single boxes.

Moreover, the tray packs provide a valuable new merchandising tool for Red Dot salesmen and their customers. One supermarket chain reports that this tray-pack handling enabled it to cut selling price of the 1-lb. boxes 10¢—giving the shopper more for her money.

What a Difference!

This is all a far cry from the old tedious method. Red Dot used to paper-bundle and tape the boxes in dozen lots, then dolly-move them to shipping, where they had to be assembled for transport. This way, loading operations were slow and cumbersome. And there was the same time-taking routine in moving bundles in and out of warehouses and in handling them (and individual boxes) in the stores.

But with the new pack the whole system is streamlined. Details:

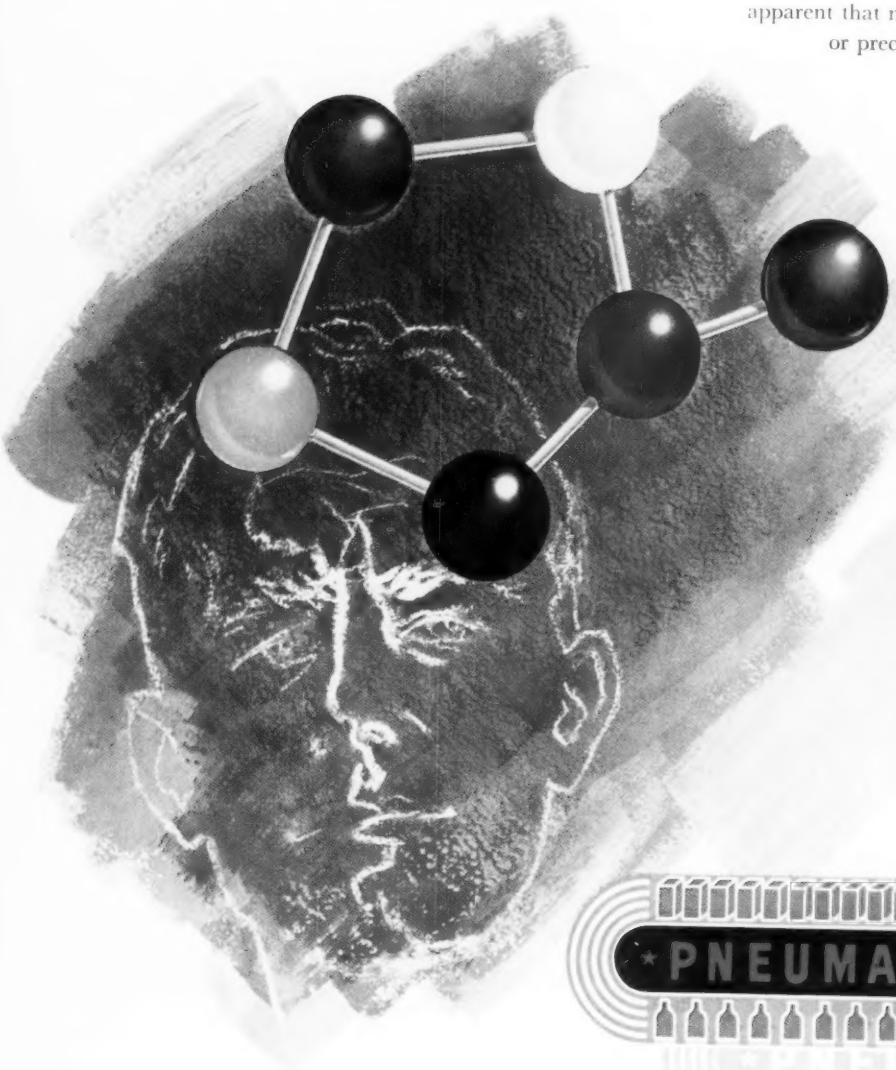
The trays (Forsberg Paper Box Co.) are made of 125-lb.-test corrugated paper, 2½x18½x29 in. Received flat, they're machine-stapled on the production line. A dozen boxes of chips are assembled into bottom tray, next top tray is added. Unit packs are double-string tied, then loaded onto dollies to go to shipping.

Biggest handling savings stem from dolly movements of tray packs to chain-store warehouses and then to stores. Developed by Red Dot were special dollies constructed of plywood (⅝x29x37 in.) on which are mounted two fixed and two free-wheeling 3-in.-dia. casters. A 4-in. wide canvas strap, bolted to one end of the plywood, is wrapped around a double stack of ten tray packs and secured by a hook. —*FE Staff*

For more data, circle 292 on Reader Service Card→

Most essential element

IN THE NATURE OF THINGS . . . as man delves deeper in his searching it becomes more and more apparent that nothing is more important . . . or precious . . . than high principles.



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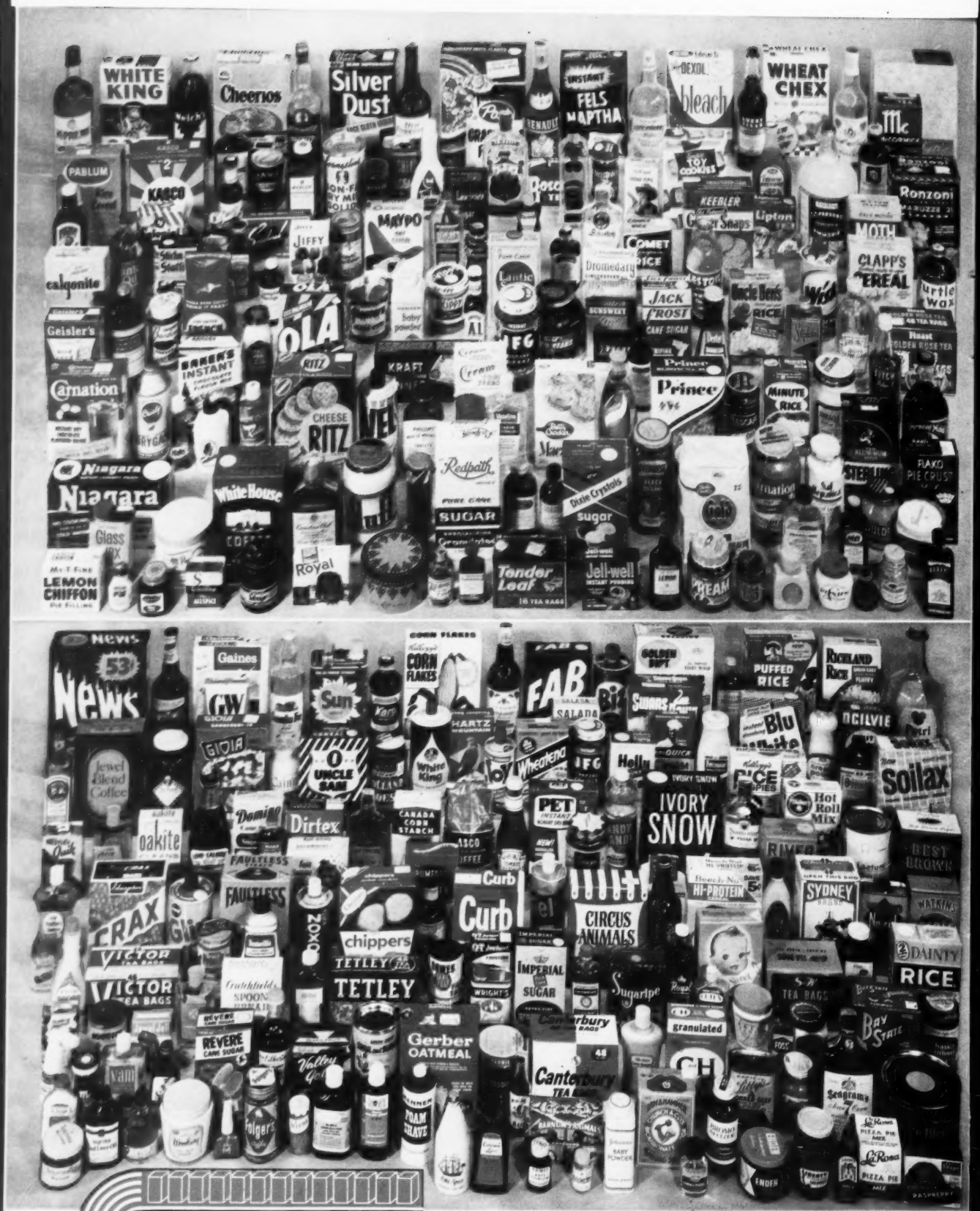

PNEUMATIC *Packaging and Bottling Equipment*

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Smarter Your Revamp, Bigger the Savings

Mechanization of packing operations is sharpest—saves most dollars—when backed by true working-line thinking . . . Success of this fruit packer should spark others into checking their operations

BEST PRESCRIPTION for cutting costs is, "Do it simpler." And prime way to simplify is astute mechanization.

That's how we figured at Summersweet Orchard Sales Co. So we took a very close look at our fresh-peach packing line and carefully checked and weighed every step that would benefit by mechanization or modification. Then we went about putting the changes into effect.

The payoff was immediate. Where manual packing of 1,000 bu. of peaches an hour had required 156 workers, we now use but 60.

Let's spotlight the details of our $50,000 revamping project:

We formerly used 6 or more men for the task of hauling in the field boxes (from unloading dock to packing shed) and dumping them on a line leading to grading, sizing, and packing stations. But with installation of a mechanical dumper (Trescott Co.) we now need only 2 men here. And we've brought the line closer to the unloading dock.

In addition, packing-shed operations are more uniform now that they're geared to the 1,000-box/hr. capacity of the mechanical dumper.

Further, we installed an in-line sizing machine, adjustable to separate the peaches into five different sizes. This enables us to better satisfy the specialized needs of our customers. Our former sizer had required additional costly hand-selection.

Other prize new features are the four fully automatic units (Trescott) used to pack No. 1 size peaches (over 2 in. dia.) into wirebound cushioned crates. These packers are fed by belt conveyor.

In our old operation, the empty crates were fed to the packing station on a roller conveyor. A crew of 10 men then packed the crates with fruit.

Today's method needs only 3 men to control the flow of peaches via belt to the crate-packing machines, supply empty crates to a circular overhead conveyor chain, and feed empties to the four packing machines.

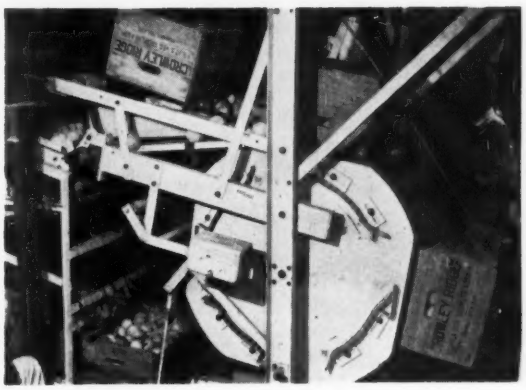
Another cost-trimming change is the direct conveyance of crate-packed peaches through a hydrocooler, without manual or truck handling.

Still another is the crate-closing machine, which uses 1 man to do the work formerly requiring 6.

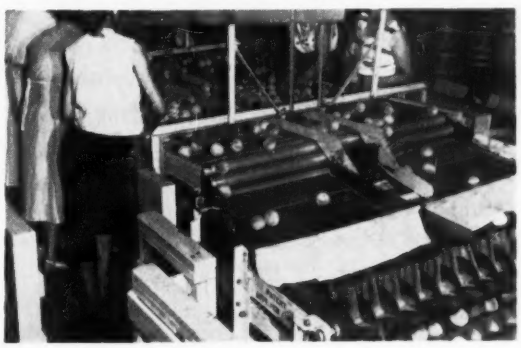
Incidentally, the switch from bushel baskets to wirebound crates for No. 1 size peaches has eliminated the 10¢ packing cost for "facing"—hand packing of the top layer of bushel baskets to show off fruit to best advantage. —*End*

A. C. EICHBERG

Owner, Summersweet Orchards Sales Co., Forrest City, Ark.

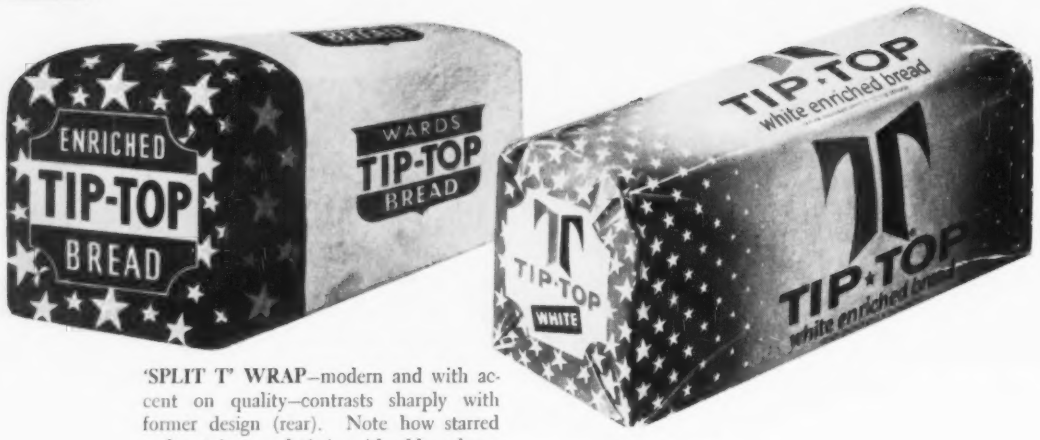


UP TO 1,000 BOXES AN HOUR are handled by automatic rotary lug dumper. Peaches drop onto lower carpet of V-belts.



SPEEDIER INSPECTION is achieved on this aluminum roller belt unit. Culls move along center compartment to chute. Acceptable fruit travels outer lanes to cups of sizer.

NEW AUTOMATIC PACKING funnels No. 1 peaches into lined crates at four stations. When correct fill weight is reached, crates lower automatically to cross-conveyor leading to hydrocooler. Empties feed into stations via overhead chain conveyor.



'SPLIT T' WRAP—modern and with accent on quality—contrasts sharply with former design (rear). Note how starred ends retain sound tie-in with old package.

2-in-1 Design Wins Top Versatility

Ward's new "split T" package symbolizes company as well as product to boost sales. Further, wrap is completely modernized while retaining identity with old design

WITH SPECTACLES perched precariously atop a mountainous nose, a prim little lady named Emily Tipp is calling consumer and retailer attention to Ward Baking Co.'s bright new bread package. Via TV, radio, and printed ads, she announces that "The split T is the first thing you see on the new Tip Top wrapper!"

A sharp rise in unit sales is evidence that the "split T" wrapper is not only being seen but is boosting sales.

But why did Ward change its package design? Why did it tire of a wrapper design it had been using for 17 years?

James A. Kirkman, v.-p. in charge of marketing at Ward, supplies the answer: "The original design was not modern enough in concept. It was not creating the Ward image. We wanted not only a package design but a symbol which could be used for the entire company."

The objective was clear cut: A package design which would offer all the advantages necessary in a sharply competitive market, and would also be applicable as a company trademark. But there was an added requirement. The new design must retain a tie-in with the old package, insuring that the old and steady customers would not be lost in the shuffle.

Jim Nash Associates got the assignment to do the redesigning. The designers began with the elements on the old package, the stars and the red, white, and blue colors. And as they worked, significant market and consumer research data was fed to them from extensive field tests of new wrappers.

The field tests utilized several wrappers. In some—those in New York City, for example—wrappers bearing the familiar Emily Tipp-TV cartoon character were tested. For others a star design was tried. A few of the markets retained the old wrapper. But all supplied useful data on consumer reactions.

Several designers worked on the new wrapper at once, each pursuing his own line of development.

- A circus tent in a red and blue checkerboard pattern offered a direct appeal to children.
- A red barn stressed home-style freshness.
- Balloon and whirling-top designs provided a light and gay approach.
- To utilize the traditional stars, designers experimented with shooting stars and stylized star patterns.
- Sun designs emphasized the nutrition aspect.

Several of the approaches used

EMILY TIPP points out some of the steps in the design of the Ward trademark.

cartoon characters. As candidates for the actual Ward trademark, these were rejected—as was also Emily Tipp herself.

"Emily Tipp is a very successful television property. She is doing a great job for us on TV, but she is strictly a cartoon personality. We used her on the wrapper to capitalize on her popularity, but she is not lasting enough for a trademark. We felt that it was necessary, too, to have a trademark tying in more closely with the name of the product itself," says Mr. Kirkman.

So, cartoons featuring a baker, a child eating bread, a figure holding a spoon were rejected.

Then, designers working with the name Tip Top deleveloped the "Double T." The T's were tried in a heraldic design, also with stalks of wheat. Finally, following the trend toward simplification of design, artists came up with the "split T."

Approved, the "split T" provided a bright, modern design. As for the tie-in with the old wrapper, bright red ends with white stars met this requirement.

The new Tip Top wrapper hit the streets on Feb. 16 and was enthusiastically received by the retailers, the consumers—and by the Ward organization.

The advantages of the "split T" are many:

It provides quick identification.

It can be printed in black and white as well as blue and red.

It is simple and classic enough to be used as a company trademark.

On TV, it can be animated.

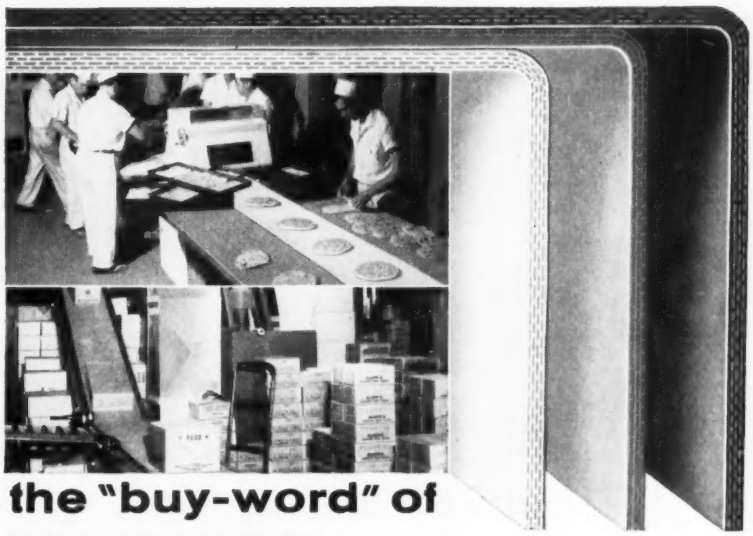
It can be described verbally, making it acceptable for radio commercials.

A change in packaging material supplemented the new design. A polyethylene coated paper was adapted for the special sheen it gives the wrapper under supermarket lighting. This sheen greatly boosts the quality look of the new package. —*End*

TIP TOP

tip top

TIP TOP



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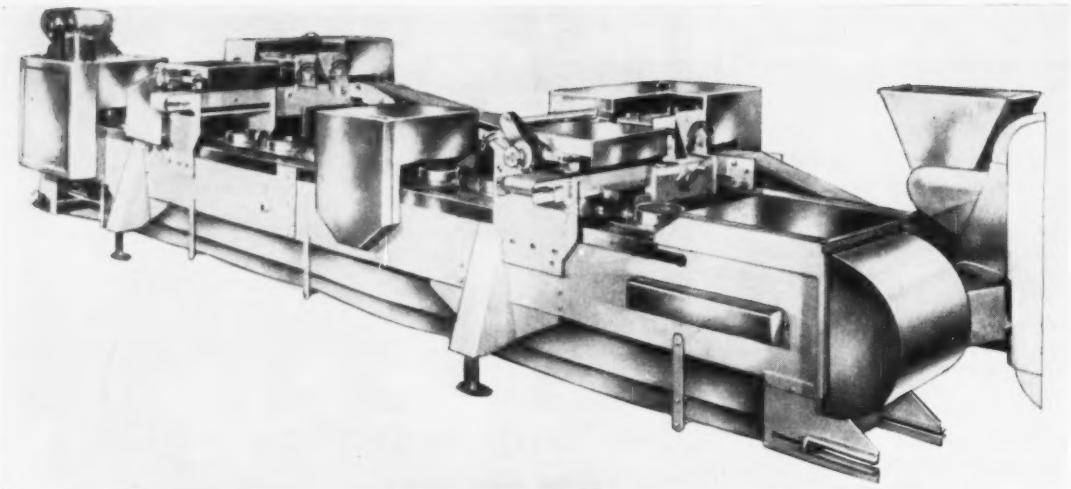


AUTOMATIC PIE MACHINE produces 55/min. Dough is divided into rectangular blocks, then cross sheeted by two sets of rollers—one for bottom, other for top crust. Filling is automatically added before top crust is applied.

Holds Profit Line With Automation

Pie baker spikes rising materials and labor costs by installing latest processing units. Gets better quality, too

"HOW CAN WE offset the pressure of higher materials and operating costs?"

That question has been faced and answered by the rapidly expanding California Pie & Baking Co., New York's leading restaurant and institutional pie bakery.

Working closely with machine makers and their engineers, company officers several years ago developed a program for re-equipping and modernizing their bakery. An important object was to assemble and install the new units in the existing space—and without interrupting production.

In less than a year the new units were in and working. "They represent," says the 68-yr.-old company founder, Harry Turner, "over $200,000 in equipment and a lifetime of faith."

The new setup comprises a number of special units, conveyors, and controls. Most important are:

▶ An automatic pie-making machine that turns out 55 large pies per minute with three men. Previously, two smaller units employing 12 men were needed.

▶ A 60-ft. direct gas fired tunnel oven equipped with special infeed and discharge devices and controls.

▶ A filler for cream and custard pies that gives improved uniformity and quality, and practically eliminates "cripples."

▶ A semi-automatic topping machine that decorates 1,800 pies per hour.

ALEXANDER ASTRACK
Food Consultant, New York City

Operations Pinpointed

The specially designed straightline heavy duty pie machine (Colborne) is used for production of 2-crusted 8- and 10-in. fruit pies.

This pie machine sheets the dough two ways, forms bottom crusts in the pie tins, adds fruit filling (except green apple), applies the top crusts and an egg wash.

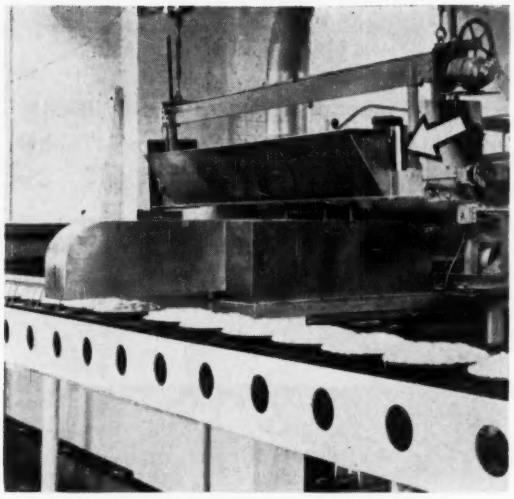
In its operation, previously prepared and chilled dough is transferred from a storage table to feed hopper of the dough divider. Here it is formed into uniform size, rectangular-shaped "balls." Flour is sifted on top of each ball, then the balls are turned over, placed on two parallel conveyor belts that feed the bottom and top crust sheeters.

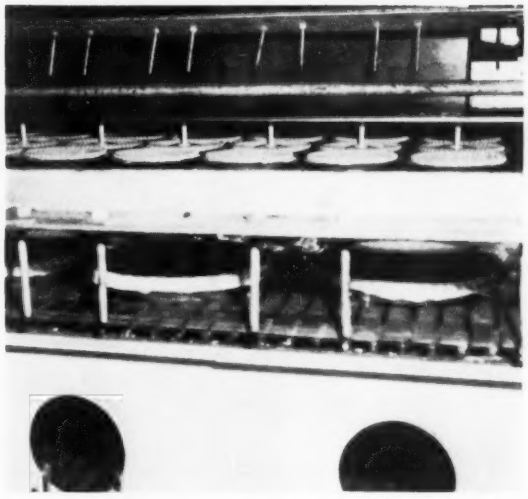
Flour is sifted on other side of the dough balls as they are conveyed under automatic depositors. Then the dough is cross sheeted. First sheeter places bottom crust in pie tins as they are conveyed single-file under the bottom rollers. Then edges of the dough are moistened.

Next, the tins pass under a dual-head filler that deposits (in 2 steps) a measured quantity of fruit filling. Then, consecutively, top crusts are applied (by second sheeter), excess dough automatically trimmed off, the pies egg-washed to produce a glaze, and the pans ejected from conveyor-mounted holders. Dough trimmed from each pie drops onto a belt that returns it to the divider.

In the case of green apple pies, which are filled with freshly prepared slices of ripe fruit, this step is performed manually. Otherwise, their production is similar to the above.

Completed pies are conveyed to a previously installed oven (AMF). Here an automatic spacer transfers them to a slatted conveyor, and lines them up 1 in. apart. This unit also separates the line into groups of 11, providing a 12-in. space between each group. At loading end of oven,





FILLING EFFICIENCY. Left photo: Feed end of new 60-ft. gas-fired oven was extended to include special monorail-mounted cream-and-custard pie filler (arrow). Right: Closeup of multi-spouts adding filling to shells.

steel fingers push an entire group onto the hearth, where a conveyor takes over and moves them through the tunnel.

Custard and Cream Pies

The new oven (Baker Perkins) is used for layer and pound cakes, fruit and cream pies. A special feature of it is the extended feed end which provides space above the exposed hearth for an automatic filler (Hope). This enables custard and cream pies to be filled just before they enter the oven proper. It has eliminated spillage, cut cost of producing this type of pie, and practically done away with "cripples."

Pans containing a bottom crust are conveyed to the oven, assembled into groups of ten 10-in. or twelve 8-in. shells and started on their way to the tunnel in much the same way as with the fruit pies. Just before they enter the oven, they pass under the previously mentioned filling unit, which works in conjunction with the automatic oven loading device, jetting a measured amount of filling into each of the pies simultaneously.

Filling unit is mounted on a monorail which permits its easy removal when oven is not used for cream pies.

At delivery end of oven, an automatic unloading device transfers the rows of baked pies from the hearth onto a cross conveyor extending across the width of the oven. Two 90-deg. turns and a straight conveyor section facilitate the transfer from oven unloader to shipping room.

This mechanized setup has reduced production costs of cream pies by an estimated 60%.

CREAM PIE TOPPER is big labor saver. Pies are placed in circular openings (left) in rotating table, topped ones are gently ejected onto conveyor (right).

Semi-Automatic Topper

One of the greatest banes to the pie baker has been mass production of stable whipped topped cream pies. The old squeeze-bag method using whipped cream was slow and cumbersome, and the end product was relatively unstable. This frequently resulted in as many as 25% of this type pies being disposed of as cripples.

Here again, California Pie, in cooperation with equipment manufacturers and suppliers, came up with the answers by: (1) Having designed and built a machine (Eveready) that tops 1,800 pies per hour with two men, and (2) developing a topping that possesses a jolt-resistant texture.

In preparation of topped pies, filled shells are trucked to the topping machine and manually placed in round cavities of a rotating table. Pies move under a filling device which automatically decorates them with topping, then table moves to discharge position where finished pies are lifted from the cavities and gently pushed onto a belt that conveys them to the loading room.

Has this modernization paid off? Mr. Turner is sure it has. For in spite of the fact that raw material costs have increased more than 35%, wage rates, coupled with fringe benefits, have doubled in the last 10 years, and the work week shortened from 6 days to 37½ hr., cost of the operation has not increased. —*End*

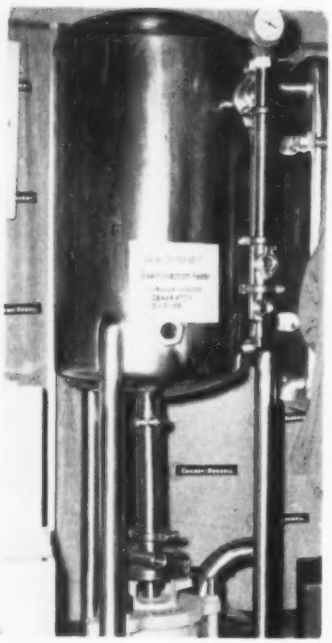
Spotlight on

27 process speeders, product improvers, cost cutters highlighting Chicago canners' show. Included are handlers, packagers, size reducers, plus general and special devices

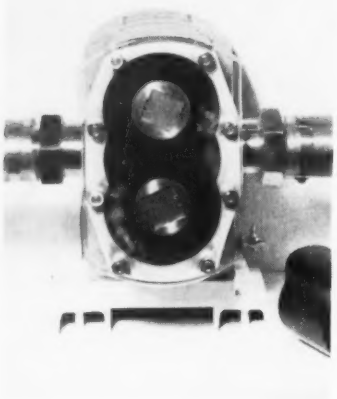
5 Product Handlers

SANITARY FLOW METER has interchangeable orifice and quick-release clamps for easy cleaning. Flow-transmitter diaphragm elements eliminate purging of sensing lines.—*Taylor Instrument Cos., Rochester, N.Y.* (16)

IMMERSION DIPPER is new efficiency equipment. It quickly treats field boxes with wood preservative. Hooked to water circulating system unit also serves as box washer at close of packing season.—*Darworth Inc., Simsbury, Conn.* (17)



CENTRIFUGAL PUMP directly introduces product into impeller. Object is to abolish surging and loss of priming when hooked up to hot wells or vacuum pans.—*Cherry-Burrell Corp., Cedar Rapids, Ia.* (18)

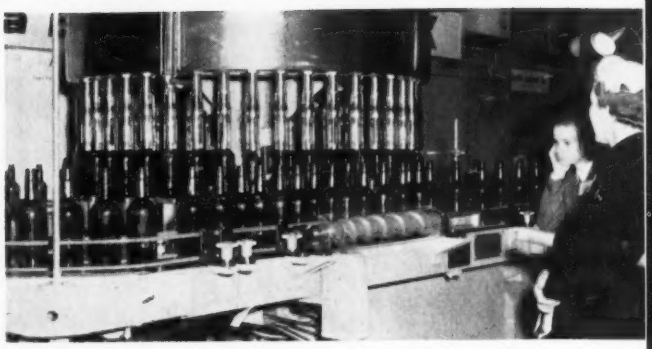


STAINLESS PUMP (rotary) handles various products with minimum particle break-up, even at temperatures up to 220F. Rubber-covered rotors give positive flow, don't 'wear' case.—*Creamery Package Mfg. Co., Chicago.* (19)

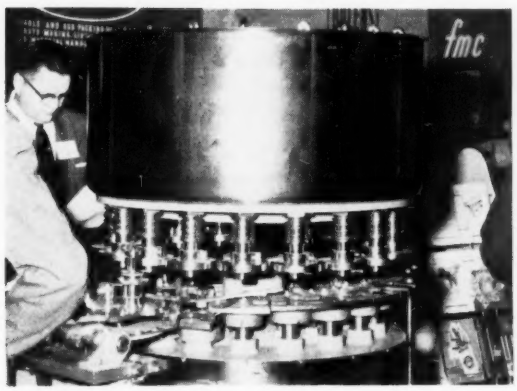
VACUUM-HOPPER LOADER'S level-controller starts cycling timer when material is needed. Flexible throat seals vac chamber, opens to discharge product. Handles 1,200 lb./hr. —*Rainco Mfg. Inc. Franklin Pa.* (20)

Latest Machines

6 Packaging Machines



44-HEAD BOTTLE FILLER has automatic lubing for platform-lifter assembly. Fluid-clutch drive speeds unit to full running rate (220-bpm.). Air-operated product line feeds filler bowl.—*Horix Mfg. Co., Pittsburgh.* (21)

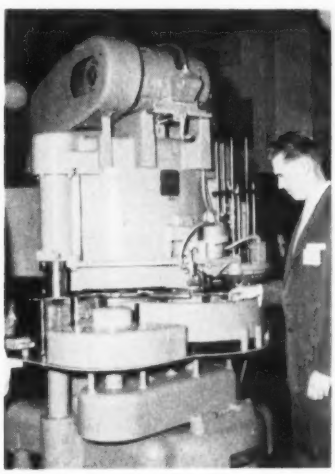


18-VALVE JUICE FILLER has valve with clamptype seal and stem guide for fill accuracy and reduced wear. New drive abolishes backlash. Cans are better stabilized.—*Food Mach'y. & Chem. Corp., San Jose, Calif.* (22)

CARTON FILLER (straight-line) highlights "no carton, no fill" unit and pocket cut-off gates for highspeed, accurate 240-cpm. operation.—*Food Mach'y & Chem. Corp., San Jose, Calif.* (23)

STEEL STRAPPER is very versatile high-performance electric-powered unit. In speedy operation, it tensions tape, cuts and joins it for 2-spot welds. Operation is pushbutton-controlled.—*Acme Steel Co., Chicago.* (24)

CASE PACKER is adjustable for #202 to #10 cans and any size case. It handles 10-12 cases per min. Also modifies to perform as uncaser.—*Shuttleworth Mach'y Corp., Warren, Ind.* (25)



SEAMER for can making has 4-spindle head, handles 200 rectangular cans a min. in sizes to 1 gal. Modifies for containers above 11 in. Can feed actuates cover feed.—*Angelus Sanitary Can Mach. Co., L. A.* (26)

Turn page

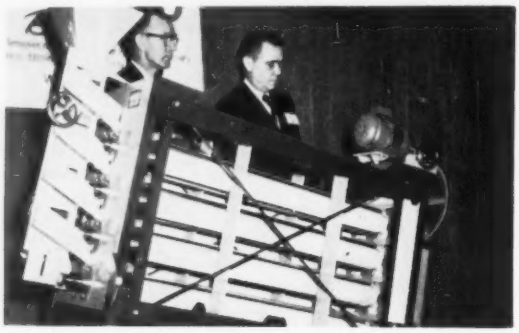
SLICER cuts 7,000 lb./hr. of plain or crinkled potato chips. Hopper-fed spuds, separated from foreign matter, drop into centrifugal slicer. Slices fall against conical unit and discharge via chute.—*Urschel Labs., Inc., Valparaiso, Ind.* (27)

MICROPULVERIZER takes tomatoes from pulper, extracts juice at 80 gal/min. Applicable to pumpkin, apple butter, sauces, other pulpy products, to produce particle sizes 0.25 to 0.010 in.—*Griffith Labs., Inc., Chicago.* (28)

3 Size Reducers

DOUBLE-ROTATING PULVERIZER has turning and stationary wear-plate baffles and counter-motion rotor for wet or dry grinding. Adjustable for grinds from ¾ to 1½ in. Fluff-grinds catsup.—*The Rainville Co., Inc., Garden City, N. Y.* (29)

5 Process Units

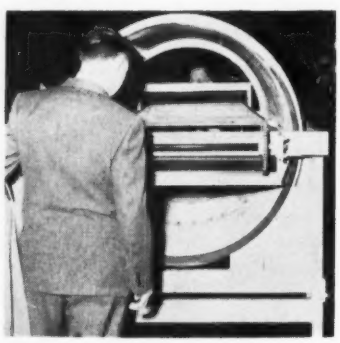


NEW CLEANER comprises eight paired rollers and metal baffles to remove foreign matter and "splits" from dry beans (3,000 lb./hr.). Adjustable for varying bean sizes.—*W. A. Rice Seed Co., Jerseyville, Ill.* (30)

SCRUBBER-WASHER (5-brush) removes field dirt from products going into fresh packs. Rate: To 5 tons/hr. Brushes are adjustable.—*Berlin-Chapman Co., Berlin, Wis.* (31)

PLASTIC POCKETS in bean-snipper cylinder are replaceable—snap in without disassembly. Assures greater snipping efficiency, more wear-resistance than metal units.—*Chisholm-Ryder Co., Niagara Falls, N. Y.* (32)

PICKLE TRIMMER-SLICER has 32 rotary pockets that feed product under circular knife. Top-cut pickles chute singly into strip slicer at 90-per-min. speed.—*A. K. Robins Co., Baltimore.* (33)



BEAN-CLUSTER BREAKER separates, cuts clusters (stem end). Assures even flow. Has vari-speed drive, rotary screen to remove dirt.—*Chisholm-Ryder Co., Niagara Falls, N. Y.* (34)

Circle key numbers on Reader Service Card, back of book.

8 More Topflight Units

UNSCRAMBLER, of oscillating-arm type, handles cans, bottles, jars. Guide rails are of Teflon. Discharge is equally adjustable for single-file delivery onto flat-top belt.—*Standard Metal Prod. Co., Chicago.* (35)

JACKETED KETTLE (electric) makes and thermostatically controls own steam, curbing overcooking of product. Tilting model available.—*Groen Mfg. Co., Chicago.* (36)

SINGLE-VALVE FILLER handles viscous products, ¾ to 32-oz. fills. A semi-automatic for small operations, it has an easy micrometer adjustment.—*Hope Mach. Co., Phila.* (37)

OVERFILL DETECTOR works on contact principle. Excessive product striking plate operates limit-switch cam to trigger pneumatic ejector.—*White Cap Co., Chicago.* (38)

NEW HEATER uses up to 150 psi. steam and 5 psi. water (or vice versa). Affords remote multi-point control of outlet flow.—*A.P.V. Co., Inc., Buffalo.* (39)

HEATING COILS (copper) are shaft-mounted for simultaneous agitation of products while cooking.—*F. H. Langsenkamp Co., Indianapolis.* (40)

LIQUID DISPENSER introduces brine into containers with electronically controlled accuracy.—*Diamond Crystal Salt Co., St. Clair, Mich.* (41)

CAN DIE-FLANGER accepts rectangular cans from body maker and flanges ends preparatory to double seaming. Handles sizes to 1 qt. at up to 250 cpm.—*The Max Ams Mach. Co., Bridgeport, Conn.* (42)

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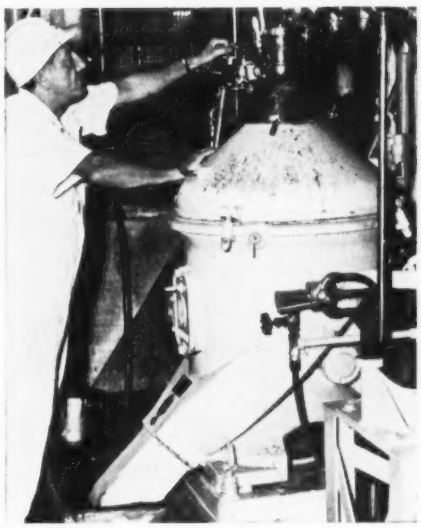

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Preliminary studies show

GLUCONO-DELTA-LACTONE

HAS DISTINCT ADVANTAGES AS ACIDULANT IN

REFRIGERATED BISCUITS • PREPARED MIXES • FROZEN ROLLS

Two factors, working together, make GLUCONO-DELTA-LACTONE an excellent acidulant for bakery products which can utilize a chemical leavening action. First is the slow hydrolysis rate of G-D-L in cold water. Second is G-D-L's increased hydrolysis rate at elevated baking temperatures.

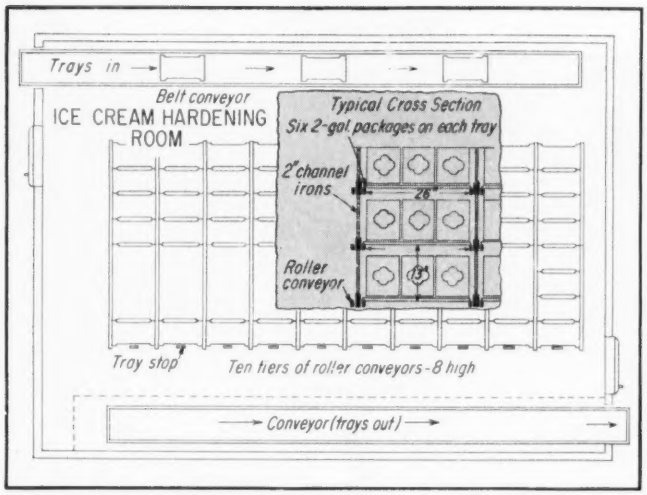
G-D-L has been found very useful in the preparation of refrigerated biscuits, prepared cake mixes and unbaked frozen rolls or doughs.

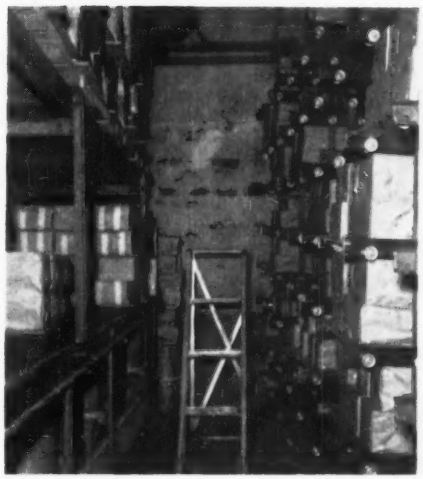
In refrigerated biscuits the conversion of G-D-L into acid is substantially inhibited at refrigeration temperatures thus reducing any loss of leavening power during shelf life. In addition G-D-L leaves no unpleasant after-taste.

Prepared mixes—here, because of its slow hydrolysis rate in cold water, G-D-L forms only a small amount of acid during cake batter preparation. This means that loss of carbon dioxide in this stage is slight. The main release of carbon dioxide occurs at the elevated temperatures during the baking cycle which is the ideal time.

Frozen Rolls—tests indicate that frozen rolls can be produced which need no thawing or proofing prior to baking when a G-D-L—sodium bicarbonate leavening system is used. Because G-D-L leaves no after-taste the dough may be first fermented by the conventional yeast system to produce typical roll flavor, or by the use of added flavor.

Pfizer invites you to investigate for yourself the seemingly distinct advantages of GLUCONO-DELTA-LACTONE as the acidulant in chemical leavening systems. Write us for technical data and a free sample.





DOING IT THE ECONOMICAL WAY is demonstrated by this semi-automatic hardening room. It comprises tiers of roller-conveyor units sloped 4 in. per 10 ft. Packaged products on trays are removed manually from infeed conveyor and placed on roller racks (inset). For loading out, trays are removed from other end of rollers and placed on discharge conveyor. Photo (right) shows orderly appearance of room.

Modern Handling—*Low-Cost* Way

New concept in hardening-room design puts 1959 methods within reach of even small budgets

AN AMPLE BUDGET is, of course, extremely handy for any food-plant engineer planning a project.

But lack of it isn't necessarily an excuse for putting up with obsolete methods and equipment.

This has been demonstrated at our dairy—McColl's—where a few inexpensive changes in the ice cream hardening room brought significant benefits. The improved installation—

1. Provides first-in-first-out operation.
2. Slashes the labor requirement.
3. Utilizes refrigeration more efficiently.
4. Speeds hardening.
5. Improves appearance of packages.

To fairly appraise our new system, let's look at the old handling methods. Packages of semi-frozen ice cream were conveyed through a port into the hardening room. Here they were manually arranged in stacks on shelves built against the walls, or on tables in center of room. Sections of shelving were designated for various flavors and package sizes.

With this method, one man spent 2 hr. each morning taking inventory to determine needed production. In addition, (1) it often required more than one man to stack incoming ice cream; (2) tight stacking made refrigeration inefficient, resulting in extended hardening time; (3) no means were provided to enable load-out men to select oldest products; and (4) loading was slowed since men had to handle loose packages.

LYLE KELLOGG
Plant Engineer, McColl's Dairy Products Co., Redding, Calif.

Pay-Off Is Impressive

The new system comprises 80 standard, 10-ft. lengths of Rapistan roller conveyors, and a number of 15x26 in. trays, or pallets, made from ¼-in. plywood. The conveyors were welded in 10 tiers, 8 high, onto 2-in. channel iron supports so that they slope 4 in. toward the load-out conveyor.

All that had to be done in the hardening room was to remove shelves and tables and install the roller racks. The previously used in-and-out belt conveyors were still applicable in the new arrangement.

At the ice cream filler, packages are put in bags—4 half-gallons, 8 quarts, or 16 pints. Then 6 of the bags (12-gal.) are loaded on a pallet, and the pallet placed on the conveyor.

Only one man is required in the hardening room. He removes loaded trays from the conveyor and places them on proper roller unit. For load-out, orders are picked by trays from discharge ends of rollers.

Most impressive gains resulting from the new system are:

1. Reduction in labor. (A) at least 2 man-hours saved daily in transferring trays instead of loose packages from incoming conveyor; (B) 1½ man-hours saved in taking inventory; and (C) saving in load-out labor, since men now handle 12-gal. at a time instead of loose packages.
2. FIFO system naturally followed because trays are loaded onto one end of rollers and orders picked from the other. Disarrangement of packages (frequent before) is now obviated.
3. Better refrigeration and quicker hardening is achieved due to relatively free flow of wind-blast between tiers of trays. Former method of tight stacking resulted in slow hardening and bulged packages from stack pressure. —*End*

US RUBBER CONVEYOR BELTS

Take it from Little Giant—

"Suit the Fruit"

Little Giant offers the right color belt for easier, more efficient inspection!

Using a conveyor belt that has the right color makes rejectable items stand out sharply, makes inspection quicker and more thorough, is easier on the workers' eyes and boosts plant morale and efficiency. Visitors to the plant are always impressed with the spic-and-span good looks of U.S. Little Giant®-equipped conveyor lines.

This belt is resistant to food, oils, acids, greases, to alkaline detergents and to moisture. Non-porous, odorless, non-contaminating and easily cleaned. It comes in different colors, depending on the food—black, green, white and orange are stocked. Other colors available if required. We will recommend the right color for your belt's inspection line.

• • •

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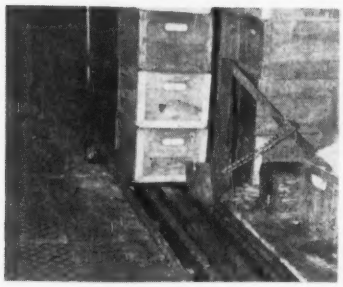


Flexible Stop Turns Cases For Easy Unloading

Recently we installed a case stacker that discharges 6-high stacks of filled milk bottles onto a double-chain floor conveyor that runs along the wall of our 110 ft. storage box. But we were immediately confronted with a problem in removing stacks.

Because of the way cases are conveyed through the plant, they are stacked so that the hand-holes are inaccessible for hand-trucking unless turned with a grapple hook.

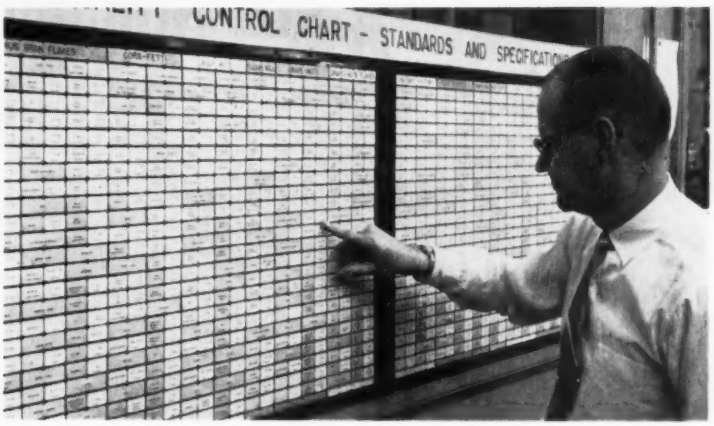
We solved the problem with a "flexible" stop installed on one side of the conveyor. The mechanism (photo) consists of an 8-in. iron plate bent at an angle of 105 deg., and hinged to a vertical post to which a heavy door spring is attached. A chain was hooked to the iron plate to keep it from swinging too far when no stack was near.

In operation, the angle plate holds a corner of the bottom case causing the stack to turn 90 deg., then automatically releases it making the hand-holes accessible for hand trucking, at any part of the storage box. The device requires no operating expense, is easy to construct, and has amazed visitors by its performance.—*S. S. Miller, Plant Manager, Queens Farms Dairy, Inc., Ozone Park, N. Y.*

Dual-Purpose Containers

Here's a money making idea for shippers and repackers of fruits and vegetables such as tomatoes which, when ripened, are displayed and sold in small tubes or trays.

By using dual-purpose, 40- and 50-lb. corrugated boxes for bulk shipment to market, then as master cartons for the small containers, a saving of more than 2c./lb. can be made.—*USDA's Agr. Marketing Service.*



Quick-Check Q.C. Chart

Since quality control is best carried out in a routine of precise checks, we developed a comprehensive chart (photo) as a master visual guide to standards, specifications, and tests.

Covered are raw materials, those in process, finished products, packages, and packing materials.

Thus in checking Post Toasties (for example), the technician has a handy, prominent checklist over which to run his eye or finger. Shown in sequence are tests of: Raw materials (checking corn grits for moisture, fat, size, and checked grits); malt flavoring syrup (relative to density); sugar and salt (moisture); vitamins (potency); etc.

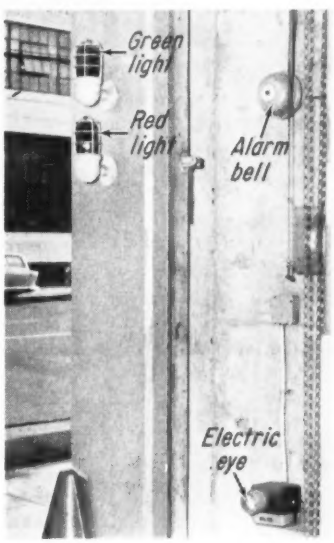
Later, during processing, the chart again is a pertinent reference, indicating these examinations: Flavoring syrup (for formulation); cooked and dried grits (moisture); and flakes (size and density). Finally shown are the finished-product gages (moisture, fat, protein, ash, sugar, and vitamins), topped off by the checks of net weight, slack fill, and quality of packages in general—including liner and carton.—*Post Div., General Foods Corp., Battle Creek, Mich.*

Electric-Eye Warning

There's a 90-deg turn in the single-line ramp to our executives' 2nd floor garage. This prevented drivers from knowing if another car was using it. Also, the abrupt exist was dangeous to pedestrians.

To obviate these hazards we put in two photo-electric eye systems—one at street level, one at top of ramp (photo). Each equipped with red and green lights, and an alarm bell. A car entering the ramp breaks light-beam, automatically sets-off alarm bell, turns off green and flashes red light.

The system operates for 20 sec., then a time-delay switch shuts off the red light and bell and turns on green light.—*John Herzog, Chief Engineer, Bergermeister Brewing Corp., San Francisco.*



SERIES 60 FILLS ALL NORMAL STEAM TRAP REQUIREMENTS

If condensate loads are average, pressures between 10 and 400 psi, temperatures under 450° F—then Series 60 are the Yarway Impulse Steam Traps for the job.

These Yarways give you unequalled advantages of *quick heat-up and steady temperatures due to continuous sampling flow, only one moving part, low maintenance, stainless steel construction, small size and light weight, good for all pressures within range, non-freezing, six sizes to choose*—PLUS *low initial cost.*

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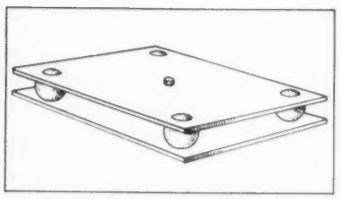

Tennis Ball Shock Absorber

To prevent vibration of a delicate laboratory instrument, an inexpensive and effective shock-absorbing base can be constructed with metal plates and tennis balls.

Use two ¼-in thick rectangular metal plates of size suited to dimensions of instrument. Bore 1¼-in. holes in corners of plates and a ⅜-in. hole in center of each.

Set a tennis ball over each hole in corners of bottom plate. Then position second plate on top. Finally, clamp plates lightly against balls with ⅜-in. bolt through center holes. These may be countersunk if projection of bolt is undesirable.

When leveling screws are desired, they can be inserted in holes drilled and tapped in lower plate. — *FE Staff.*

Over-Size Fork Lift Truck Speeds Pallet Unloading

Among the equipment remaining when our company disposed of its lumber business was a Hyster RT-150 formerly used for stacking up to 15,000 lb. loads.

Although such a large fork lifter had never been used in a food plant it was obvious that, with certain modifications, it could be used to remove units of 4 loaded pallets from flat trucks. So we replaced the 2 lift blades with four 176 in. long ones. These were mounted on the original carriage, that may be moved in the horizontal plane. Each pair was spaced to fit into 4 pallets.

Although we expected some effi-

NEW sulfamic acid-based cleaners are supplied in light, disposable cartons. They're stored and handled dry ... no spillage or breakage worries.

OLD-style liquid acid cleaners—shipped in cumbersome, returnable carboys—require careful handling to prevent breakage.

✓Safer, easy to handle

Just one of the reasons why **Dry Acid Cleaners** based on **Du Pont Sulfamic Acid** are gaining wide favor for industrial equipment cleaning: ✓ Safer to handle ✓ Easy to use ✓ No hazardous fumes ✓ Powerful descaling action ✓ Less corrosive ✓ Lower handling and shipping costs.

CLEANERS BASED ON SULFAMIC ACID REMOVE SCALE AND DEPOSITS FROM:
Food-Processing Vessels, Pipelines, Gelatin Evaporators, Milk Evaporators and Pasteurizers.

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This record chart taken from the beef cooler indicates how closely Vilter refrigeration equipment and Zer-O-Disc fin coils held the required temperature of 34 degrees and relative humidity of 85% over a 24-hour period. This day-in-day-out reliability is one reason for the wide acceptance of Vilter units in the packing industry.

360,000 pounds of beef are held in this cooler at the Serv-All Foods plant, Covington, Kentucky. Mr. Al Fedders is checking temperature and relative humidity maintained at 34 degrees and 85% relative humidity by Vilter Zer-O-Disc fin coils.

"VILTER Zer-O-Disc FIN COILS ARE THE ANSWER TO CORRECT TEMPERATURE AND HUMIDITY CONTROL,"

says Al Fedders, Maintenance Engineer, Serv-All Foods, Inc.

Holding 360,000 pounds of beef in a single cooler at 34 degrees and at 85° relative humidity is a "man-sized" job. Vilter Zer-O-Disc finned cooling coils and refrigeration equipment perform this service dependably day-in-day-out.

620 feet of Zer-O-Disc fin coils are installed in this large cooler. Correct temperature and humidity are maintained because these coils produce slow, even, positive air circulation naturally by convection. The extended fin surface cools the slowly moving air mass more quickly . . . floods the room with cold . . . holds temperature at proper level for better storage. There are no "dead spots" in the room. Product discoloration or shrinkage are minimized.

Other Vilter refrigeration equipment includes two 8-cylinder VMC ammonia booster compressors, two 8½ x 8½ vertical second stage compressors, two liquid recirculating accumulators and evaporators. Vilter equipment provides refrigeration for the large beef cooler, two main storage freezers (– 5° F.), blast freezer (– 35° F.) and four smaller storage coolers.

Call in your nearest Vilter representative and let him show you how you can improve your storage cooling for meats and sausages.

Sold and installed by Vilter Distributor, C. P. Wood & Co., Cincinnati, Ohio

Write for helpful bulletins to
The Vilter Manufacturing Company
Dept. E-806
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Milwaukee 7, Wis.

Bulletin 518 Vilter Zer-O-Disc Finned Cooling Units

Bulletin 817 Vilter VMC Ammonia Compressor

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REFRIGERATION and AIR CONDITIONING

THE VILTER MANUFACTURING COMPANY, Milwaukee 7, Wisconsin

Air Units • Ammonia & Freon Compressors • Booster Compressors • Baudelot Coolers • Water & Brine Coolers • Blast Freezers • Evaporative & Shell & Tube Condensers • Pipe Coils • Valves & Fittings • Pakice & Polarflake Ice Machines

Practical Ideas

ciencies from the innovation, we were not prepared for the surprising results—only 6-10 min. to unload a truck and trailer load of 16 pallets (42 lugs each) compared with 20-30 min. with conventional lifts. In addition, 3 fork-lifts were released for other work, and 2 men were made available for other jobs.

Since unloading is accomplished 3½ times faster, the unloading area is quickly freed for another truck, and the quick turn-around enables each truck to make more loads, which is important at height of the tomato season.—*W. A. Ten Eyck, Production Manager., Bercut-Richards Co., Sacramento Calif.*

PRACTICAL TIPS

Cuts downtime. Moving feed-trough of 3-A corn cutters as close as possible to roller conveyor push-out has virtually eliminated delays caused by plug-ups of broken cobs.—*"Nibletter," Green Giant Co.*

Don't be frustrated when threads of an old pipe break off in a Tee, elbow, or coupling.

Just cut the "frozen" portion at 3 equally spaced places, using a small 3-corner file or a hacksaw blade. Then knock out each segment with a punch. Or knock out one and unscrew the others. This can be done without damaging the thread in fitting.

Corn cobs are sped from husker's flight bars, to fall on husking rolls, when plate underneath is shortened and bent upward 1½ in. Bent plate imparts a vibratory action to flight bars, which helps release cobs and curbs carry-overs into silage conveyor. —*"Nibletter," Green Giant Co.*

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We'll do the finished writing and drawing for you.

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Are your $2/hr. men waiting for 30¢/hr. equipment?

It actually may cost *you* less than 30¢ an hour to own and operate a Clark Powrworker®. In arriving at our figure we included such "extras" as cost of charging equipment, 6% interest on the money you have invested in the equipment, an additional 2% interest as a miscellaneous expense, even the cost of current to recharge batteries. This was all over and above the normal charges of: cost of truck, depreciation, insurance, taxes, and freight.

But even at this "high" figure of 30¢ per hour . . . can you afford to keep manpower waiting for lack of sufficient equipment? In pure economics, it makes good sense to give your men the trucks they need . . . especially since it costs so little to own and operate a Clark Powrworker. Possibly, our headline should have read: "*Give every man his own truck!*" Startling? True. But we can show you figures to prove that this bold action is highly profitable.

Surely worth investigating. Send for the 16-page Powrworker booklet. We'll include the name and phone of a local representative who can review our figures with you in detail. Write or wire: Powrworker, Clark Equipment Company, Battle Creek, Michigan.

CLARK® EQUIPMENT

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Best way to Increase Flavor, Texture and Value

Food processors have long relied upon the quality ingredients distributed to the food industry by Corn Products Sales Company: Cerelose dextrose sugar; Buffalo, Hudson River and Snowflake starches; Rex and Globe corn syrups. These fine products bolster the flavor, texture and color of fine foods—factors that enhance food value and keep buyers reaching for your brand.

The sugars, syrups and starches available from Corn Products Sales Company do more than increase these desirable food qualities: they save on production costs as well. These *natural* products are easy to handle, lead to more efficient, economical processing. Their carefully controlled quality, uniform from day-to-day, means your formulations can be consistent and standardized.

The experience amassed by our technical representatives in incorporating Corn Products sugars, syrups and starches in virtually every type of fine food product sold today, is always at your service. For full information on how these quality-enhancing ingredients can be adapted to your processing, call our nearest sales office or write direct.

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packs most power

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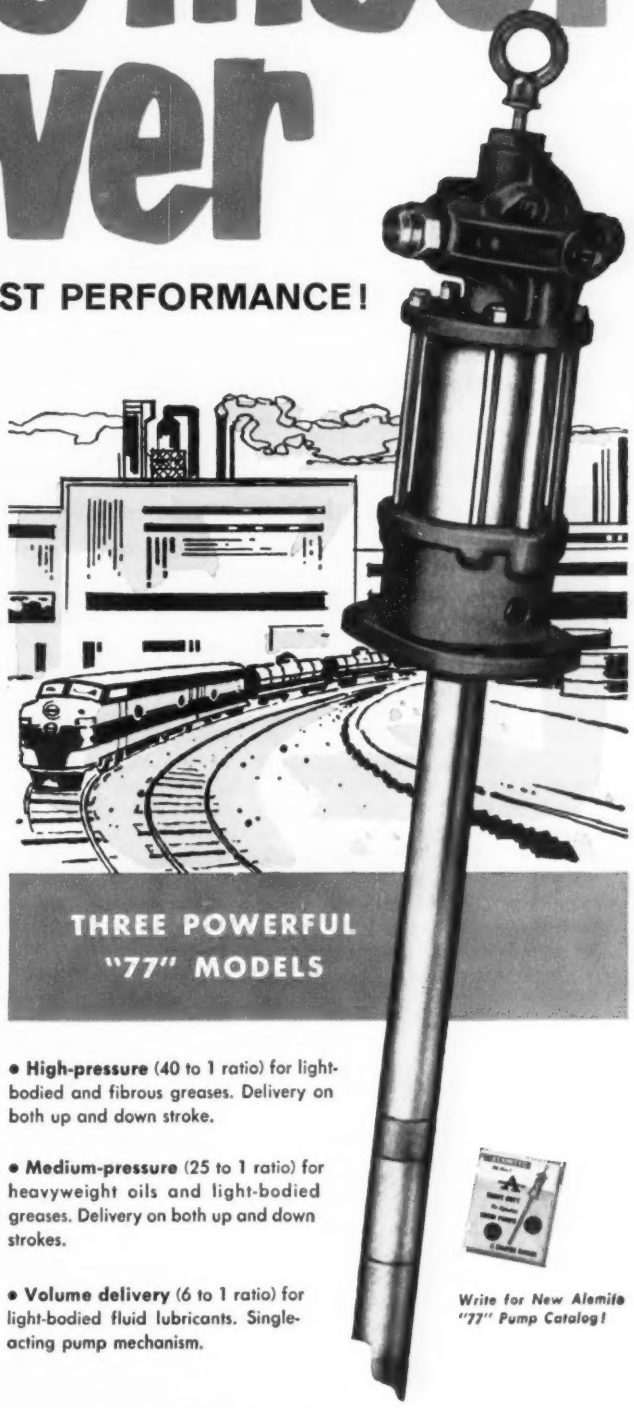

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Three Master Pressure Ratios for unequalled delivery of all lubricants – fluid, semi-solid and heavy fibrous types. Lightweight, rust-proof aluminum construction.

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• **Volume Air Distributing Valve**–self-seating, self-cleaning, volume porting • **Modern-Design, Highly Efficient Toggle Trip Mechanism** provides balanced pressure on shuttle . . . won't bind • **Straight-Line Exhaust** has extra-large port for highest pump efficiency • **Hardened Steel Piston and Cylinder,** lapped to a precision fit of 125 millionths of an inch • **All-Steel Primer Valve,** ground to a perfect seal . . . hardened for abrasion resistance • **Dynamic Primer** assures priming and pumping of heaviest lubricants.

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• **High-pressure** (40 to 1 ratio) for light-bodied and fibrous greases. Delivery on both up and down stroke.

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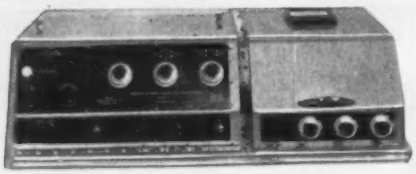


11. Gardner Model AC-2 Automatic Self-Standardizing Color Difference Meter

12. Color Tolerance Computer (Instrument Development Laboratories)

13. Purdue Color Ratio Meter (Food Research & Development)

SPECIALIZED INSTRUMENTS eliminate calculations in computing small color differences. They also facilitate accurate

FOOD COLORIMETRY:

To accurately describe and control your food colors, practical specification systems have been devised. These vary, according to attributes involved, from simple comparators to comprehensive dictionaries

SPECIAL REPORT, PART II—SPECIFICATION SYSTEMS*

THE NEED for precision with food colors has led to various specification systems. Some relate to particular commodities, others are sufficiently general and basic to serve entire fields.

It is pertinent to note, however, that many color problems can be satisfactorily handled without full-fledged specification. This is the case when a single attribute, rather than the over-all color, is influenced by such factors as processing.[3, 4]

Simplest system is a series of comparators relating color of a sample to the standard it most closely approximates.

In grading fats and greases, for example, color of the filtered sample may be expressed in terms of liquid standards of the Fats Analysis Committee of AOCS and ACS.

Here, the standards comprise a series of 26 stable solutions of inorganic salts, filled into sealed tubes. They are placed, one at a time, in a wooden transmission block for comparison with a tube containing the sample.

True, this system doesn't characterize physical color attributes. But because of the relatively narrow range of variations, plus simplicity and acceptance of the method, this procedure is most useful and practical.

Similar specifications are used in grading maple syrup, honey, peaches, and lima beans. Standards for latter two are plastic reflectance comparators, while former are of glass.

Color Dictionaries

Somewhat more sophisticated are checks against colors illustrated in various dictionaries. Thus, there is a systematic sampling of the color solid—*i.e.*, the 3-dimensional space in which colors need to be conceived to exist if they are to be classified in an organized manner. Of interest are color-mixture systems such as Ridgway charts and the Ostwald systems.[2]

Color Standards and Color Nomenclature, by Robert Ridgway contains about one thousand 1x1½-in. paper standards, representing mixtures of chromatic colors with various levels of black or white. Each color is named and can be located by designating plate and column numbers and row letter.

In the Ostwald system, a color is described in terms of its white-, black-, and full-color content. Latter is the difference in reflectance between minimum constant reflectance of two complementary wavelengths in the visible spectrum, and another, higher constant reflectance elsewhere in the spectrum.

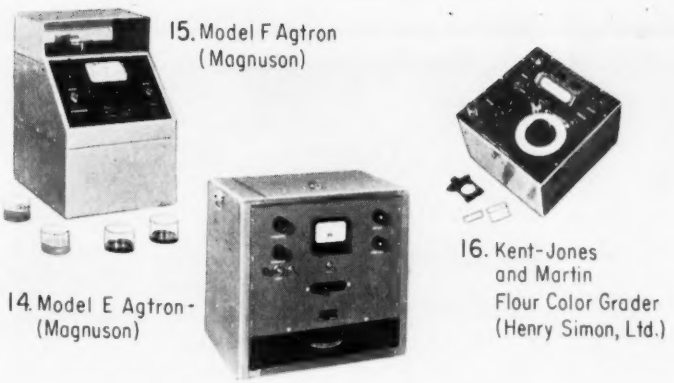
A Dictionary of Color, by A. Maerz and M. R. Paul, contains 7,056 different samples, systematically arranged according to hue, and prepared by combining mixtures of 8 chromatic and 7 base gray pigments (see Judd[2]). A number of USDA Grades for canned foods have used these references for designating limits of color. Products as different as canned raspberries, mushrooms, and tomatoes can be graded with assistance of appropriate plates.

Of far greater importance to the food field is the classification system developed by Albert H. Munsell in the late 90s.[5] Here, color is conceived as possessing three dimensions or parameters (hue, value, and

GIDEON E LIVINGSTON

Formerly, Associate Professor of Food Technology, University of Massachusetts, Amherst, now Research Supervisor, Research Laboratories, Continental Baking Co., Rye, N.Y.

* For Part I of this two-part report, see FE Mar., p. 74.



15. Model F Agtron (Magnuson)

16. Kent-Jones and Martin Flour Color Grader (Henry Simon, Ltd.)

14. Model E Agtron-(Magnuson)

grading of fruits, vegetables, liquids, purees and granular products.

Key to Quality Control

chroma). This enables any color to be located in a color solid, which is roughly spherical in configuration (Fig. 1 on following page).

The hue scale is represented by the band of colors encountered at the equator of the sphere, value scale by the vertical axis running from south to north pole and chroma scale by the dimension measured along lines drawn from value axis outward to circumference at any given latitude.

Chromatic colors in the hue circuit are arranged in five principal classes: Red, yellow, green, blue, and purple, (R,Y,G,B, and P). Intermediates of these are subdivisions such as yellow-red (YR), green-yellow (GY), blue-green (BG). Each of the 10 hues is further divided into 10 steps, labeled numerically from 1 to 10, thus producing a total of 100 designations.

Value notations indicate degree of lightness or darkness by reference to the achromatic scale corresponding to the vertical axis of the sphere. Pure black is value 0, pure white 10. For practical purposes, 0 and 10 are unattainable.

Chroma notations denote degree of saturation or strength of the color —i.e., degree of freedom of admixture with the achromatic gray of the same value. Since purpose of the Munsell system was to arrange colors into scales of equal visual steps, a larger number are required in certain hues than in others. It is this non-uniformity that creates the departure of the color solid from its ideally spherical shape.

A complete Munsell notation for a given color reads in terms of hue, value, and chroma, and is written, hue value/chroma. For example, the red color used in determining the factor under USDA grades for tomato catsup is 5R 2.6/13.

Munsell notations can be used directly by comparing samples with single color standards, or by determining percentage of each of several colors (on a spinning Maxwell disk) required to produce a match for the sample under controlled illumination. Both type and angle of illumination should be controlled in order to obtain satisfactory results. These requirements are met in the Macbeth-Munsell disk colorimeter.

The Inter-Society Color Council-National Bureau of Standard method (ISCC-NBS system, developed for the U.S. Pharmacopoeia, National Formulary, and industrial standardization of color terms in general), is based on a Munsell-like arrangement of colors. Boundaries of 267 name blocks or ranges within the color solid have been defined in terms of Munsell renotations. Twenty-eight hue terms are used in the system.[1]

Trichromatic Systems

Basis for specification by trichromatic means is the fact that any color can be matched by a suitable mixture of three radiations. There is the further observation that if two are thus matched, their combined color will in turn match the combined color of the lights which were necessary to match the single colors (Grassmann's Laws). Such agreement can be obtained through either additive or subtractive colorimetry, though with greater difficulty through the latter.

Using appropriate primaries, it is possible to determine proportions of each light required to match a given color, and plot distances involved on a triangular grid. The Maxwell triangle (Fig. 2), can be drawn as either an equilateral or a right angle isosceles triangle. Later is usually preferred, since it is adaptable to ordinary coordinate paper.

Unfortunately, when real lights are used as primaries, many colors cannot suitably be matched without using negative amounts of one primary. That is to say, some real colors will fall outside the boundaries of the triangle in which each apex point represents a real primary.

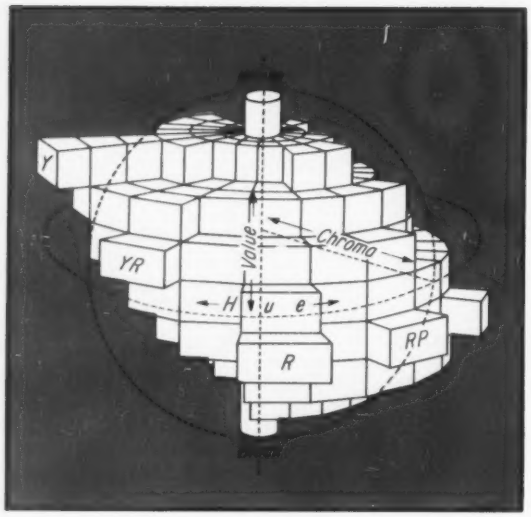
While it is perfectly possible to specify colors in spite of this shortcoming, it does complicate both the mathematics of color notations and the optics of the system required to obtain the readings.

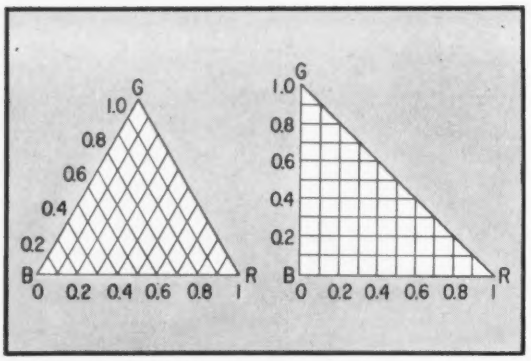
Thus, it is simpler to specify three theoretical primaries, so defined that any real colors will fall within the boundaries of the triangle formed with the primaries as apices. This is the basis for the X,Y,Z trichromatic system, in which X represents an imaginary red, Y an imaginary green, and Z an imaginary blue.

These primaries constitute part of the color specification system adopted in 1931 by the Commission Internationale d'Eclairage (International Commission on Illumination), usually referred to as the C.I.E. Its purpose was to provide a specification which accounts for the three factors previously discussed—spectral reflectance of sample, characteristics of light source, and spectral sensitivity of the human observer.

To obtain accurate trichromatic specifications for color in the C.I.E. system, it is necessary to prepare a spectral curve of the sample, using a reflectance spectrophotometer. Such a curve shows, at each wavelength within the range of the visible spectrum (380-780 mμ), percent reflectance of the sample relative to a white standard assumed to have a reflectance of 100%.

The white standard consists of a





COLOR CLASSIFICATION SYSTEMS.
Fig. 1. (Left) Munsell Solid enables specification of any color according to hue, value, and chroma.
Fig. 2. (Above). With Maxwell method, proportions of three radiations required to match given color are plotted on triangles.

freshly deposited layer of magnesium oxide prepared by condensing smoke of pure magnesium on a suitable surface. Such standards, however, need to be freshly prepared prior to use. Accordingly, permanent secondary standards, such as Vitrolite and Carrara glass whose reflectances can be expressed in terms of magnesium oxide, are generally used in routine work.

Spectral reflection curve for sample is then weighted by integration with values representing, at each wavelength, relative irradiance of light source under which sample is to be viewed, and amounts of X,Y,Z primaries required to produce, for a standard observer, color of spectrum at that wavelength:

$$X = \int_{380}^{780} \bar{x} I R d\lambda$$

$$Y = \int_{380}^{780} \bar{y} I R d\lambda$$

$$Z = \int_{380}^{780} \bar{z} I R d\lambda$$

where: 380-780 mμ are wavelengths of accepted limits of human vision under normal conditions,

I is spectral energy distribution for illuminant,
R is spectrum reflectance or transmittance of sample,
d is an infinitesimal wavelength interval,
$\bar{x}$, $\bar{y}$ and $\bar{z}$ are X, Y, Z, values of spectrum.

The three light sources most commonly used are Illuminant A, (gas-filled incandescent lamp, with color temperature of 3,854 deg. K.), Illuminant B, (noon sunlight, with color temperature of 4,870 deg. K), and Illuminant C (average daylight from an overcast northern sky, with color temperature of 6,740 deg. K).

Value of X,Y,Z primaries required to match light of uniform energy at different wavelength within visible spectrum are shown in Fig. 3.

Color temperature is a means of describing color of a light by reference to temperature in degrees Kelvin of a black body radiator emitting such a light. Relative spectral irradiance of these sources is illustrated in Fig. 4.

When these curves are obtained using illuminants described above (rather than ones of equal energy throughout the spectrum), resulting values at each wavelength may be used to weight reflectance of sample whose tristimulus (X,Y,Z) values are to be determined under appropriate illumination.

While integration is the most accurate means of calculating tristimulus values, in practice it requires a mechanical integrator. In absence of this, an approximation can be made by a summation procedure using finite intervals in the spectral range.

Two procedures generally used are: (1) Weighted ordinate method, in which measurements are taken at intervals of 10 mμ throughout the visible spectrum, and each reflectance value multiplied by appropriate weighting factor (derived from tristimulus value at that wavelength for desired illuminant); and (2) selected ordinate method in which 10, 30, or 100 wavelengths are used for measurement of each tristimulus function.

Since these wavelengths are so spaced that they correspond to uniform increments of each primary in the spectrum of the source, it is not necessary to multiply each reflectance value obtained, but simply add them and multiply the sum by the proper factor.[6]

Spectral reflectance data can be readily obtained by available manual, semi-automatic, or recording spectrophotometers.

To plot the tristimulus values onto a right-angle Maxwell triangle, it is necessary to convert them into chromaticity coordinates or trichromatic coefficients x,y,z. This is readily done with these formulas:

$$x = \frac{X}{X + Y + Z}$$

$$y = \frac{Y}{X + Y + Z}$$

$$z = \frac{Z}{X + Y + Z}$$

In the resulting chromaticity diagram, imaginary red primary (X) is located at $x = 1$, $y = 0$; green primary (Y) at $x = 0$, $y = 1$; and blue primary (z) at $x = 0$, $y = 0$. It should be noted that the line drawn through the chromaticity coordinates of the spectrum forms the boundary for all realizable colors.

Center point N ($x = 0.33$; $y = 0.33$) represents a neutral point which, along an axis perpendicular to the graph, would include all shades of gray from black to white. Points falling within area enclosed by loci of spectral colors represent those achievable by mixtures of dominant

wavelength (on boundary line) and appropriate gray at point N. The closer the point determined for a particular sample falls to spectral color, the greater the purity of color.

Since Y functions of the C.I.E.-standard observer is a measure of luminous reflectance, Y value of a particular sample represents directly the brightness of the product. Thus, by specifying the x, y, and Y values of a material, one has a complete measure of the color—*i.e.*, its hue (dominant wavelength), purity (chroma or saturation), and brightness (value or lightness).

To simplify tristimulus measurements, colorimeters equipped with suitable filters can be used. Since the X,Y,Z primaries are theoretical and not realizable through existing colorants, it is not possible to manufacture filters that will provide a direct measurement. However, source-filter-photocell combinations have been developed which will produce a useful approximation of the tristimulus values under Illuminant C.

Most commonly used are amber, green, and blue filters developed by Hunter.[7] Reflectance measurements obtained with these, relative to magnesium oxide, are converted into tristimulus values in the C.I.E. system as follows:

$$X = 0.80\,A + 0.18\,B$$
$$Y = 1.00\,G$$
$$Z = 1.18\,B$$

Where A, B, and G represent reflectances obtained with the three filters, respectively.

The Photovolt reflection meter can be used with the tristimulus filter to obtain the amber, blue, and green values, which then can be converted into X,Y,Z values by above equations. The Color Eye provides data reading directly in tristimulus values. The Colormaster differential colorimeter may also be used for the determination of X,Y,Z values. These also can be calculated from data obtained with the Gardner (formerly Hunter) color-difference meter (Photo 11).

Principal shortcoming of the C.I.E. diagram is that equivalent numerical distances between two points in various areas do not represent differences of equal visually perceptible magnitude. This means that color differences expressed in C.I.E. chromaticity coordinates are not meaningful unless preceded by careful study of the area in which they fall.

To overcome this disadvantage, three techniques have been used. One is to express color difference measurements obtained from C.I.E. in units of uniform perceptibility difference throughout the color solid. The National Bureau of Standards (NBS) color difference units (ΔE) accomplish this objective:

$$\Delta E = f_s\left\{[700^{y^{1/6}}(\Delta\alpha^2 + \Delta\beta^2)^{1/2}]^2 + [K\Delta(Y^{1/2})]^2\right\}^{1/2}$$

where: f_s is a factor correcting for masking influence of glossy surface on detection of color differences, and k is a constant

$$\alpha = \frac{2.4266x - 1.3631y - 0.3214}{1.0000x + 2.2633y + 1.1054}$$

and

$$\beta = \frac{0.5710x + 1.2447y - 0.5708}{1.0000x + 2.2633y + 1.1054}$$

($\Delta\alpha$ and $\Delta\beta$ are, of course, differences in α and β values of two colors whose differences is being measured.)

Calculations required to determine ΔE from C.I.E. values on samples can be eliminated through use of a mechanical computor (Photo 12).

A second method is through superimposition upon the C.I.E. diagram of areas of equal spacing. Several attempts in this direction have been made, of which MacAdam's is the best known. A recent publication[8] has considerably facilitated the task of computing small color differences. It presents charts of uniform visual spacing for areas within the C.I.E. diagram.

Third technique is development of color diagrams of equal chromatic spacing, some more closely related to the C.I.E. system than others. Noteworthy are Adams' chromatic-value diagram and his chromatic-valence space which have, regrettably, received too little attention.

More familiar to food technologists is Hunter's color solid, which is essentially a rectangular block with dimensions known as a, b, and L (or Rd). This color solid, like the others mentioned, is based on dimensions related to hue, chroma, and lightness. Location of a color in a plane is given by distances a and b from the origin, while elevation of plane (brightness) is indicated by the L value.

The quadrant having positive a and b values contains red to yellow hues. The one having positive a and negative b values contains red to blue hues. That having negative a and b values has hues ranging from blue to green, while the quadrant having negative a and positive b values ranges green to yellow.

Measure of hue most commonly used in the Hunter solid is the ratio a/b. However, Francis[9] and others[10, 11] have found the $\tan^{-1}$ a/b value —*i.e.*, the angle which the line from a given point to the origin makes with the b axis—a more satisfactory function of hue.

Chroma, or saturation, is determined by calculating distance from point to origin $\sqrt{a^2 + b^2}$. Distance between two points is figured in the same manner, but taken into account here is the 3-dimensional nature of the solid:

$$\Delta E = \sqrt{\Delta L^2 + \Delta a^2 + \Delta b^2}$$

The a, b, and L measurements can be obtained by means of a reflection colorimeter using Hunter's tristimulus amber, blue, and green filters.

Relationship between these units and reflectance values obtained with these filters is shown by the equations:

$$L = 100\sqrt{G}$$
$$a_L = \frac{175\,(0.80A - G + 0.20B)}{\sqrt{G}}$$
$$b_L = \frac{70\,(G - B)}{\sqrt{G}}$$

The various Gardner color difference instruments provide data in

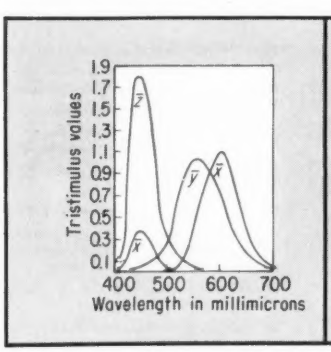


FIG. 3. TRISTIMULUS VALUES of colors of the spectrum.

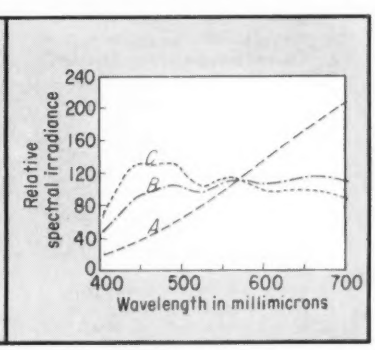


FIG. 4. SPECTRAL irradiance of CIE Illuminants A, B, and C.

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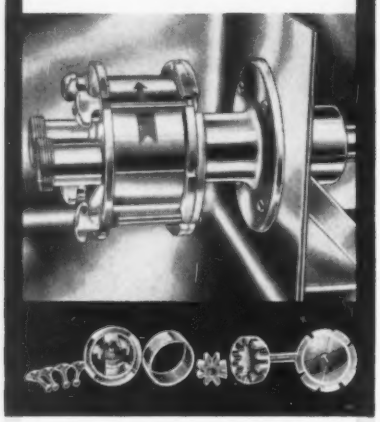

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terms of a_L, b_L, and L values or, using a different circuit within the measurements in terms of rd, a_R, and b_R values. Latter are defined by . . .

$$R_d = 100G$$
$$a = 175 f_g (0.80A - G + 0.20B)$$
$$b = 70 f_g (G - B)$$

where $f_g = 0.51 \dfrac{(21 + 20G)}{(1 + 20G)}$

. . . and are therefore somewhat different from the a_L, b_L and L values.

While many of the instruments cited have become quite valuable as grading, quality control, and research tools, specialized features are frequently desirable. For example, very dark products cannot be measured with great accuracy using photoelectric reflection colorimeters operating with unamplified barrier-layer photocells. For such cases, an instrument equipped with a photomultiplier tube, such as the Color Eye, might be needed.

The current model possesses these two added features which increase its usefulness: (1) Filters spaced at 33-34 mμ intervals from 400-700 mμ, enabling it to be used as an abridged spectrophotometer; and (2) Illuminants A and C, built in, thus rendering it useful for detection of metameric matches (two colors which are

24 Colorimetric Instruments . . .

	Numbers Key to Makers Listed Below
Color difference computers (delta E)	16, 21
Color standards for food products	18, 25, 28, 30
Colorimeters, reflection, photoelectric	2, 3, 16, 21, 24, 25, 31, 39
Colorimeters, reflection, visual	14
Colorimeters, transmission, photoelectric	3, 8, 9, 10, 11, 14, 16, 18, 19, 21, 23, 24, 27, 30, 31, 37, 38, 39
Colorimeters, transmission, visual	4, 8, 14, 18, 28, 31, 36
Comparator, reflection	8, 28, 36
Comparators, transmission	16, 18, 23, 30, 35, 36
Flame photometers	1, 9, 11, 29, 32, 37, 39
Flow colorimeters	4, 5, 6, 9, 21, 22, 31
Fluorimeters	3, 9, 11, 13, 14, 23, 31, 37, 39
Gloss meters	2, 16, 31
Goniophotometers	16
Inspection lights	12, 18, 24, 35, 36
Light scattering photometers	3, 30, 32
Nephelometers	3, 11, 14, 23, 30, 31, 37
Special product colorimeters	9, 15, 16, 18, 25, 30, 31, 34
Spectrofluorometers	3, 5, 13
Spectrophotometers, infrared range	5, 7, 9, 29, 37, 39,
Spectrophotometers, ultraviolet range	5, 7, 9, 29, 37, 39
Spectrophotometers, visible range	5, 8, 9, 10, 11, 17, 29, 33, 37, 39
Spectroreflectometers	3, 5, 8, 9, 14, 17, 37, 39
Tristimulus colorimeters	3, 16, 19, 20, 21, 22, 26, 31, 39
Turbidimeters	3, 9, 11, 18, 23, 30, 39

. . . And 39 Companies Making Them

1. **Advanced Instruments, Inc.**, Newton Highlands 61, Mass. (410)
2. **Allegheny Instrument Co., Inc.**, Cumberland, Md. (411)
3. **American Instruments Co., Inc.**, Silver Spring, Md. (412)
4. **American Optical Co., Instrument Div.**, Buffalo 15, N.Y. (413)
5. **Applied Physics Corp.**, Pasadena 1, Calif. (414)
6. **Axler Associates, Inc.**, Corona 68, N.Y. (415)
7. **Baird-Atomic, Inc.**, Cambridge 38, Mass. (416)
8. **Bausch & Lomb Optical Co., Scientific Instruments Div.**, Rochester 2, N.Y. (417)
9. **Beckman Instruments, Inc., Scientific Instruments Div.**, Fullerton, Calif. (418)
10. **Central Scientific Co.**, Chicago 13, (419)
11. **Coleman Instruments, Inc.**, Maywood 1, Ill. (420)
12. **Crown Engineering & Sales Co.**, Harrison, N.J. (421)
13. **Farrand Optical Co., Inc.**, N.Y. City (422)
14. **Fisher Scientific Co.**, N.Y. City (423)
15. **Food Research & Development, Inc.**, Lafayette, Ind (424)
16. **Gardner Laboratory Inc.**, Bethesda 14, Md. (425)
17. **General Electric Co.**, Schenectady 5, N.Y. (426)
18. **Hellige, Inc.**, Garden City, N.Y. (427)
19. **Hilger & Watts, Ltd.**, London, N.W. 1, England, (Represented by: **Jarrell Ash Co.**, Newtonville 60, Mass.) (428)
20. **Hunter Associates Laboratory**, McLean, Va. (429)
21. **Instrument Development Laboratories, Inc.**, Attleboro, Mass. (430)
22. **Keye Development Co.**, Stamford, Conn. (431)
23. **Klett Mfg. Co.**, N.Y. City (432)
24. **Macbeth Corp.**, Newburgh, N.Y. (433)
25. **Magnuson Engineers, Inc.**, San Jose, Calif. (434)
26. **Manufacturers Engineering & Equipment Corp.**, Hatboro, Pa. (435)
27. **Minneapolis-Honeywell Regulator Co., Rubicon Instruments**, Philadelphia 32 (436)
28. **Munsell Color Co., Inc.**, Baltimore, Md. (437)
29. **The Perkin-Elmer Corp.**, Norwalk, Conn. (438)
30. **Phoenix Precision Instrument Co.**, Philadelphia (439)
31. **Photovolt Corp.**, N. Y. City (440)
32. **Process & Instruments**, Brooklyn, N.Y. (441)
33. **Prolabo**, Paris Xieme, France (442)
34. **Henry Simon Ltd.**, Stockport, England (443)
35. **W. A. Taylor & Co.**, Baltimore, Md. (444)
36. **The Tintometer Ltd.**, Salisbury, England, (Represented by: **The British Drug Houses Ltd.**, Toronto 14, Canada) (445)
37. **Unicam Instruments Ltd.**, Cambridge, England (446)
38. **Weston Electrical Instrument Corp.**, Newark N.J. (447)
39. **Carl Zeiss, Inc.**, N.Y. City (448)

Circle by numbers on reader service card, back of book.

visually identical under one illuminant, but different under another).

The Purdue color ratio meter (photo 13) and the Agtron Models E and F are designed for very specialized applications. The Purdue unit was developed to facilitate tomato grading, by determining as an index of maturity the red-to-yellow ratio of either whole tomatoes or tomato juice.[12]

The Agtron Model E measures ratio of green to red reflectance of cut tomato halves as a means of determining color quality and hence grade of fruit.[13] The Model F is used for liquids, pulps, etc.

The Kent-Jones and Martin flour color grader (photo 16) was devised for objective color measurements of flour.[14]

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14. Kent-Jones, D. W. and Martin, W., "A Photo-Electric Method of Determining the Colour of Food as Affected by Grade, by Measurement of Reflecting Power." *The Analyst 75*, 127-33, 1950.

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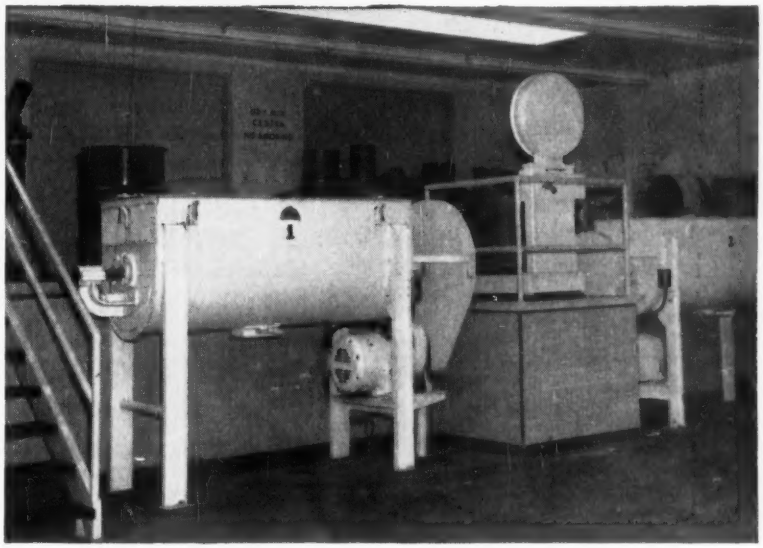

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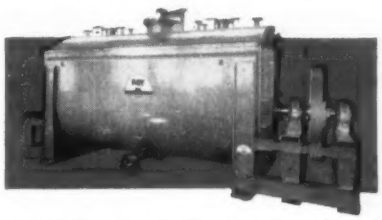

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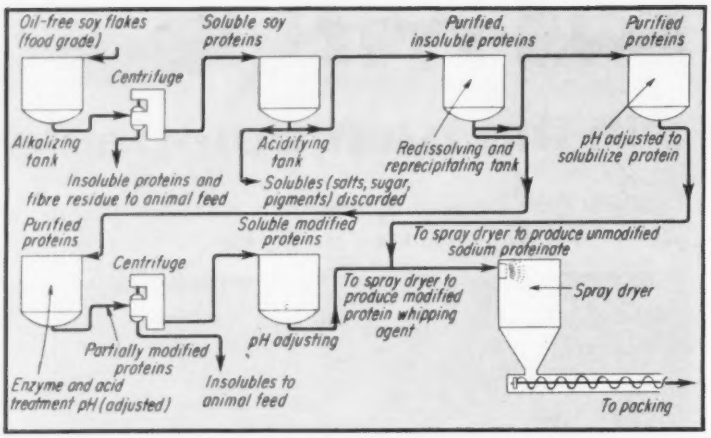

HOW THEY'RE MADE. Starting with oil-free soy flakes, the proteins are separated from insoluble fibre and purified. Processing is then varied to obtain desired properties in the finished, spray-dried materials.

TABLE I—SOY PROTEINS Contain Good Quantities of Essential Amino Acids

Amino Acid	Amount (Percent)
Arginine	7.3
Cystine	1.9
Histidine	2.9
Isoleucine	6.0
Leucine	8.0
Lysine	6.8
Methionine	1.7
Phenylalanine	5.3
Threonine	3.9
Tryptophane	1.4
Valine	5.3

WHEN USED to increase protein content of foods, soy proteins also provide a better amino acid balance.

Those New Soy Proteins

● Come in striking variety ● Often out-perform others ● Cost you less

NOW BEING ISOLATED from oil-free, food-grade soy flakes are highly concentrated proteins that can supplement or replace other proteins—and at an appreciable cost saving.

▶ They're produced in granular and powdered forms suitable for a wide range of functions such as whipping, emulsifying, gelling, stabilizing, thickening, and moisture-binding.

▶ They're almost 90% protein, and are practically free of undesirable indigestible carbohydrates and flavor factors.

▶ They contain all essential amino acids—and in good quantity (see Table I). At low cost, they correct inadequate protein contents of foods, thereby providing them with better protein quality and amino acid balance.

Number of protein products that can be made from soy is practically endless.

Their many varieties are influenced by the mild treatment techniques and conditions employed in isolating and modifying them without chemical degradation. They're available in unmodified and modified types, as well as a sodium proteinate (produced at 7.5 pH).

Those not modified by enzymes or other reagents are soluble, or dispersable, in water above pH 6.0 and below 3.0. At the 4.6-isoelectric point (acid-base equilibrium), they're least soluble. Low-temperature spray-dried powders are produced at pH's of 4.6, 6.5, and 7.5.

Sole soy proteins produced in water-dispersable forms are those dried at 7.5 pH. At room temperature, they readily disperse in water, without the need of adding peptizing (protein-splitting) agents.

However, some proteins spray dried at pH 4.5 can be easily wetted. Adding an alkali, such as sodium hydroxide or trisodium phosphate, to raise the pH to 8.5, or higher, disperses the wetted proteins. Then, if necessary, pH can be lowered to 7.0, without the proteins precipitating.

These "unmodifieds" have a wide range of applications. They're used in emulsifying fats or oils. They even replace milk solids in the production of fat-containing whipped toppings. And they go into all-vegetable frozen desserts, using 3-4% to combine with a 10-14% vegetable fat, 12-15% sugar and 6-10% corn syrup to produce a mix that's homogenized and then it is frozen.

The sodium proteinates are employed in fried foods as fat-blocking agents.

Most extensively used are the chemically modified whipping agents. These, too, are instantly water soluble (without swelling or soaking) when dispersed above pH 6.0 and below 3.0. The insoluble ones can be made dispersable with certain wetting agents. In the 3.8 to 8.0 pH-range, they demonstrate uniform whipping characteristics and are unaffected by food acids.

They'll aerate almost all types of low-fat solutions and dispersions with moisture contents ranging from 20 to 98%. About half as much of these proteins produce as much aeration as egg albumen. By dissolving rapidly, they whip more quickly. Anywhere from 1 to 5% produces desired aeration or whipping effect. Confections require less than dessert mixes, such as chiffons that need up to 5%.

Being heat stable, they can be used without precipitating in chilled or boiling mixes. They're compatible with virtually all ingredients normally used in icings, prepared mixes, etc. They're free from objectionable flavors frequently encountered in the less refined products.

JUSTIN J. ALIKONIS

Director, Al-Chem Laboratory, Inc., Bloomington, Ill.

THEY'RE USED as whipping agents in fudge, nougat, and marshmallow, and as stabilizers in many prepared mixes.

TABLE II – POTENTIAL USES for Soy Proteins

BAKED GOODS: Biscuits, Bread & rolls, Breading, Cakes, Cookies & crackers, Croutons, Doughnuts, Frozen doughs, Matzos, Muffins, Pie crust, Pie fillings, Pizza, Prepared mixes, pretzels, Short breads, Special flours, Sweet goods, Tortillas, Zwieback.
CEREALS: Cooked, Dry, Baby, Fortified.
CONFECTIONS: Candy, Chocolate products, Icings.
DAIRY PRODUCTS: All-vegetable "cream", Cheddar-type cheese, Cream cheese, Cottage cheese, Flavored drinks, Fortified milk, Frozen desserts, Ice cream, Margarine, Sour cream, Spreads, Whipped toppings, Whipped cream, Yogurt.
EGG-TYPE ITEMS: Egg white, yolk and whole egg extenders, Meringues, Icings.
COATINGS: Brushed, dipped and spray types, Casings, Glazes.
GELATIN PRODUCTS
MACARONI PRODUCTS
MEATS: Baby meats, Franks & bologna, Ground meats, Potted meats, Sausages.
ORIENTAL FOODS
SURVIVAL RATIONS
VEGETABLES
SPECIALTY FOODS: Appetizers, Baby foods, Beverages, Bouillons, Flavor carriers, Dessert products, Dietary foods, Dumplings, Emulsions, Geriatric foods, Gravies, Meats & other flavoring, Protein hydrolysates, Reducing diets, Salad dressings, Snacks, Spreads, Stews, Thickeners, Vegetarian foods.

As a result, they don't alter, or detract from, a product's taste. And so they're used with gelatin, gums, egg albumen, starch, sugars, syrups, and chocolate products.

As stated, selection of production technique depends upon products being made. Here's a brief rundown on processes and products:

The oil-free soy flakes are first dispersed in an alkaline solution to solubilize the proteins. Solution is then pumped to a centrifuge or through a filter, where proteins are separated from the insoluble residue (which goes into animal feeds).

Soluble proteins are pumped into a vat, and then acid-treated to make them insoluble. Soluble sugars, salts, and pigments are drawn off and discarded. Remaining proteins are further purified by redissolving and then reprecipitating them.

At this stage, the purified proteins are processed into unmodified or modified products. Soluble unmodified sodium proteinate is produced by adjusting pH of protein solution (to solubilize proteins) and then low-temperature spray drying.

Modified protein whipping agents are made by enzyme- and acid-treating purified products. Now partially modified, these proteins are pH-adjusted. By centrifuging or filtering, the proteins are again separated into insoluble fractions (which go into animal feed) and soluble-fractions. Soluble modified proteins are again pH-adjusted and then spray dried.

Acknowledgement: The author wishes to thank Central Soya Co., Inc., Chicago; Gunther Products, Inc., Galesburg, Ill.; and A. E. Staley Mfg. Co., Decatur, Ill. for their aid with key material for the above article.

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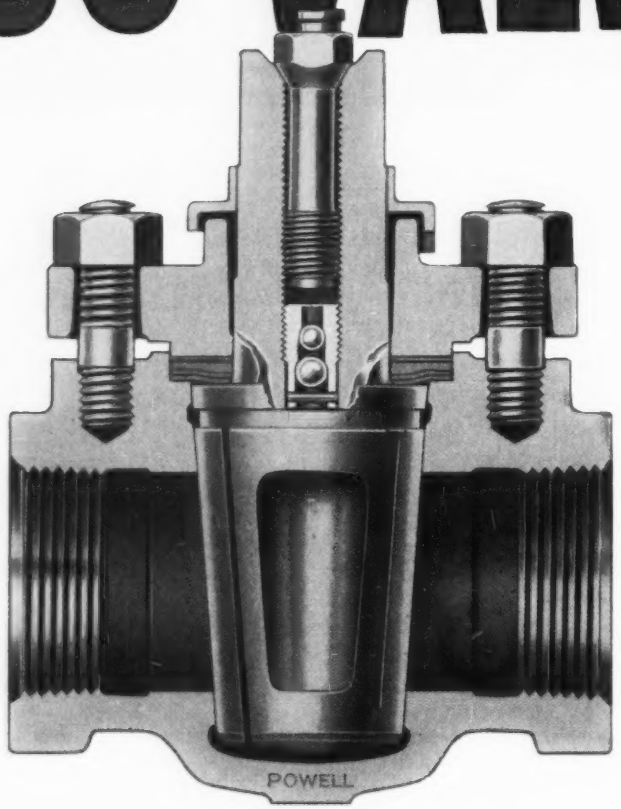

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Floc in Sugar Syrups

Acid syrups made with refined granulated cane sugar frequently develop lumps or flocs which have been found to consist of 3 type substances:

1. Finely divided carbon picked up in the decolorizing process.
2. Lipids, starch, and some protein. The lipids apparently come from wax cuticle normally found in sugar cane.
3. Silica and other ash constituents.

Sugars developing the most floc are generally those with the highest carbon content. These particles apparently serve as nuclei for aggregation of the colloidal materials.

Researchers feel that elimination of these materials before crystallizing the sugar will minimize floc formation. — *Agr. Research* (USDA), March, 1959.

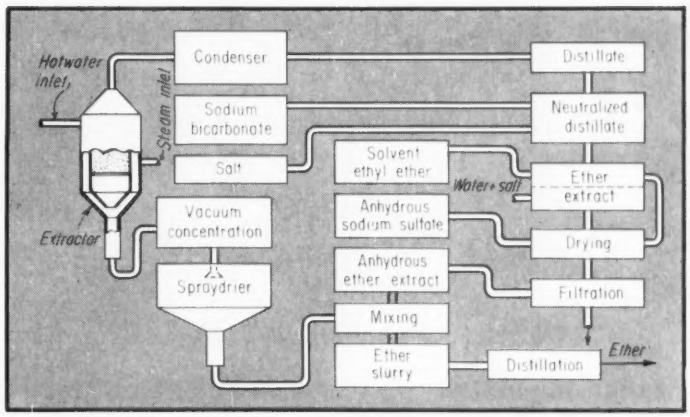
New Method Ups Accuracy Of Chocolate Grind Test

Fineness of grind of chocolate and cocoa is often assessed by placing a minute amount of chocolate-oil mixture on anvil of a micrometer and measuring thickness of film. Readings are so small (about 0.0007 in.) however, that the method is not very useful.

If a chocolate-oil film is applied to a standard taper (1 to 10) glass stopper which is then inserted into its socket, the stopper protrudes about 20 times the thickness of the film. A hardened steel stopper is superior to glass, and such an apparatus has been devised.

A stopper weighing 550g. is used together with a supplementary weight of 200g. to give the chocolate film a standard weight for setting of 750g. A 25 g. sample of chocolate thoroughly mixed with 125 ml. of liquid cocoa butter is poured into the bowl or "moat" around the stopper which is lifted slightly (6 or 7 mm.) for the mixture to be drawn around the stopper by suction. Measurements are made at 40-50 C.

Unit has been mechanized under the name of "Metriscope" a device which will measure about 20 samples per hour, giving the fineness of the chocolate grind in thousandths of cc. —*Chem. Ind.*, 46, 1506-7, 1958.



Volatile Flavor Recovery and Return Feature New Soluble Coffee Process

Capturing the volatiles normally lost in production of instant coffee, then stabilizing and incorporating them in the dried body material is the object of a recent patent.

Process involves 3 separate steps (drawing above). First, steam is introduced into the ground roasted coffee to wet it and, simultaneously, liberate the volatile constituents thereof. The steam-volatiles mixture is then condensed, neutralized, and extracted with a solvent such as purified ethyl ether. Flavor-containing solvent is separated from the water by decantation and further dried by means of medium such as anhydrous sodium sulfate.

Second step comprises treating the steamed coffee grounds with hot water to separate materials that are either water soluble or water dispersible. Resulting aqueous extract is concentrated under vacuum and dried.

In the third step, the dry powder is mixed with the anhydrous ether extract to form a slurry. The ether is then removed by distillation leaving the dry coffee concentrate with its volatile flavor restored.—U. S. Patent 2,853,387, Sept. 23, 1958.

Flavor of Bread Unharmed By Lysine Fortification

When added to bake goods at nutritionally optimum levels, lysine has no noticeable effect on their flavor or physical properties.

These are conclusions based on tests with standard and sweet breads, yellow and chocolate cakes, and doughnuts. Regular doughs and batters were divided into 2 equal portions. To one was added lysine monohydrochloride, the other was for a control. Baking or frying procedures were normal.

Taste threshold concentration in breads was reached at approximately 0.5g. *l.* monohydrochloride per 100 g. flour, which is double the optimum fortification level. At 0.25g./100g. flour, lysine does not affect loaf volume or crust color of standard white breads.

It does, however, produce darker crusts in fortified breads. Slightly longer baking time at a lower temperature gave lysine-fortified loaves with normal taste, texture, and desired degree of browning.—*Cereal Science Today*, 74-76, March, 1959.

Yeast Fermentations

Flocculence in yeast is a phenomenon of fermentation desirable for brewer and wine-maker, but very undesirable for distillery, and bakers' yeast maker.

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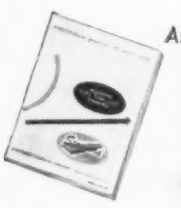

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cells clump and settle out as aggregates, condition of cell walls obviously plays a part in the phenomenon. It is now known that there are at least two layers in a yeast cell wall, a glucan layer and a mannan layer.

During a 5-day fermentation (bottom yeast) the former layer maintains a constant glucan content which is practically the same for both flocculating and non-flocculating yeasts. Mannan content of flocculating yeast cell walls at end of such a fermentation is about half that of powdery yeast.

Yeast cell walls also contain Ca in both ionic and complex forms. It appears that a flocculating yeast possesses an enzymatic mechanism that degrades a fraction of the mannan-protein of the cell wall, permitting appearance of active ionogen groups specific for Ca.—*Revue des Fermentations et des Industries Alimentaires* 12(6), 283-88, 1957.

Chlorinated Sea Water Ups Fish Quality

Fish rinsed in a spray of chlorinated sea water immediately after eviscerating and transported in hulls thoroughly washed down with a similar solution, arrive at docks cleaner and fresher than those coming from trawlers using plain sea water.

Equipment required to produce the chlorinated water consists of a metering pump and electric motor. Cl is provided by an 8% solution of sodium hypochlorite which is metered into wash water system at rate of 50-80 ppm., and into water for rinsing eviscerated fish at 10-20 ppm. —*Bureau of Commercial Fisheries, Glouchester, Mass.*

Cleanability of Materials

Plastics and other finishes of stainless steel are as readily cleanable as is 18–8 stainless with 120 grit finish.

This was determined by experiments in which effectiveness of removal of dried dairy products soil from surfaces of various disks was determined by both radioactive tracer techniques and bacteriological methods.

Materials tested were: Zytel No. 31, a polyamide; Genetron HL and VK, polychlorotrifluorethylenes; 18–8 stainless with the following finishes— 120, 100, and 80 grit, No. 7

How

mill finish, Vapo blast (VB) pebble finish, and 2B or cold rolled finish.

Soiled disks were then cleaned by scrubbing with a test tube brush for 15-sec. in one of the following: 0.25% sol. of alkaline cleaning compound; 0.25% sol. anionic detergent; 0.25% sol. nonionic detergent, 6.7% sol. acid cleaning compound.

With few exceptions, cleaned disks were sanitized within 1 min. on exposure to the germicidal solutions at room temperature. None of the cultures was positive to *E. coli* after disks had been held in germicidal sol. for 3 min.—*J. Milk & Food Tech.*, 68–72, March, 1958.

Sodium Bromide Boosts Hypochlorite Sanitizer

Bactericidal effectiveness of commercial, high-acidity, hypochlorite-type sanitizers is markedly increased by addition of sodium bromide. And corrosiveness of the product is not increased by the addition.

In tests with a commercial sanitizer (pH 11), mixtures of this product and sodium bromide, and a low alkaline (pH 8) sanitizer, the mixture containing 1.35% bromide was as effective against low resistant bacteria as the low pH product.

However, a concentration of 4% bromide was necessary to equal the low pH product against resistant bacteria.

Extensive corrosion tests with stainless strips showed no measurable effect of the high alkaline sanitizer, nor the mixture containing bromide. Heavy rust accumulations resulted from use of the low pH product.—*J. Dairy Science*, 950-55, July 1958.

Keeps Vegetables Green

Preventing discoloration of canned green vegetables by maintaining desired alkalinity during storage is the object of a recent patent.

This is accomplished by coating interior walls of the cans with a composition containing an innocuous alkaline compound which is soluble in the canning solution. The composition must be such that the alkali will progressively dissolve over a prolonged period.

Preferred alkali is magnesium hydroxide, which may be mixed with ethyl cellulose or resins. Solution is then sprayed on interior of steam-sterilized and dried cans.—U. S. Patent 2,875,071, Feb. 24, 1959.

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How RYKON GREASE

has performed in seven tough applications

In just two years since introduction, **RYKON** Grease has stepped in to deliver lubrication in hundreds of applications where other greases have failed

1

2

3

4

In the process industries where higher speeds, loads, temperatures and pressures are being put on bearings as a means of increasing productivity of equipment, a new type of grease has been needed. RYKON is that grease. Here are just seven examples of how RYKON Grease has performed in tough spots:

Industry	Equipment	Type of Bearings	Conditions	Remarks
Packing Company	can closers	various	high temperature, heavy load, wet	Outperforms previously used greases.
Brewery	washers, conveyors	various	high temperature, wet	Lasts longer and does a far better job on all applications.
Packing Company	canning machines	plain and anti-friction	wet	Very satisfactory.
Chemical Laboratory	washers and degreasers	anti-friction	wet	Better than any grease tested in degreasing solvent.
Automotive Parts Mfr.	reciprocating pump bearings	plain	wet	Pumping chemicals. O.K. after one month. Previous grease caused about one bearing failure per week.
Paper Mfr.	liquid sulfur pump	anti-friction	high temperature, wet	Has extended life of bearings.
Paper Carton Mfr.	all grease-lubricated parts	various	high temperature, heavy load, wet	Replaced eight different greases. Stays in better.

The reason RYKON Grease can perform under conditions that cause other greases to fail is this: RYKON Grease has a unique non-soap, organic thickener. This thickener holds the oil between its fibers better than any other gelling agent. The thickener is able to withstand extremely high as well as low temperatures. It resists chemical action and remains stable under conditions of severe working and water washing. RYKON Grease has exceptional anti-rust properties.

RYKON Grease's unique properties make it truly multi-purpose. This leads to many worthwhile economies. With one grease to do possibly every grease lubrication job in a plant, there's no chance for application mistakes. Inventory and handling of many single-purpose greases is reduced or eliminated and maintenance training and supervisory follow-up is greatly reduced.

More facts about RYKON Grease are yours for the asking. Call the lubrication specialist in your nearby Standard Oil office in any of the 15 Midwest and Rocky Mountain states. Or write **Standard Oil Company (Indiana), 910 S. Michigan Ave., Chicago 80, Illinois.**

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Oven test shows high temperature performance of RYKON Grease. **1.** Metal panel coated with RYKON and placed in oven at 350° F. **2.** Same panel after five days. RYKON is still soft and ready to lubricate. **3.** Another high-melt grease ready for same test. **4.** Same panel after oven test. Grease has failed completely.

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"Kingpin" Operation . . . H. J. Heinz Co. will put still more steam into foreign expansion.

That is purpose of V.-P. Junius F. Allen's elevation to international exec. v.-p., according to Chairman H. J. Heinz II.

Foreign subsidiaries accounted for $7,638,930 of Heinz' net income of $9,336,913 in 1958.

Consolidated sales currently are running at approx. annual rate of $314 million, and about 50% of that is international.

Recent foreign moves have been the new plant built in Lancashire, England, second in size only to Heinz in Pittsburgh, and purchase of Taminiau's Conservenfabrieken, N. V.—now H. J. Heinz Co. (Holland) N. V.

Junius F. Allen

Next step planned for England is erection of a research center and pilot plant and administration building.

Mr. Allen joined Heinz in 1934. He has been a director since '53, and v.-p. since '54.

Personnel

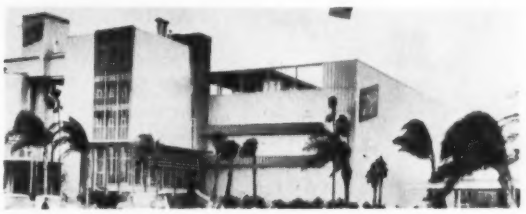
Harry Baccigaluppi, president of Calif. Grape Products Corp., San Francisco; **Benjamin C. Carter,** exec. v.-p. of Food Machinery & Chemical Corp., San Jose; and **Roland Tognazzini,** president of Union Sugar, San Francisco, will serve on 32-member business advisory council set up by Gov. Edmund G. Brown.

John M. Fox, Minute Maid Corp.'s prexy, is v.-p. of Council for International Progress in Management (USA) Inc.

Col. James P. Littlejohn is new Commandant of U. S. Army Quartermaster Food & Container Institute, Chicago.

Harold J. Humphrey, research consultant for General Foods Corp., has been elected president of National Assn. of Frozen Food Packers.

Norman Sorensen, board chairman of Country Gardens, Inc., Milwaukee, is '59 prexy of National Canners Assn. New v.-p. is **Milan D. Smith,** president of Smith Canning & Freezing Co., Pendleton, Ore.



Jos. Schlitz Brewing Co. targets 80,000 bbl. as first year production of its new $20 million brewery, recently unveiled in Tampa, Fla. This would rank it as largest brewery in South. Located on 126-acre site, its 15 buildings cover 305,000 sq.ft., and setup is such that any part may be enlarged to meet future demands without disturbing other operations.

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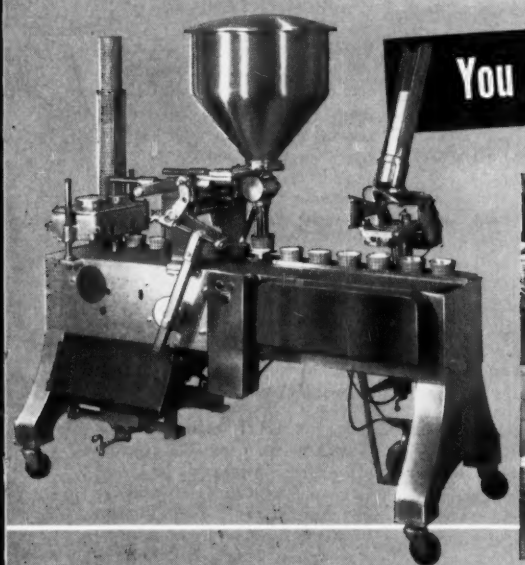

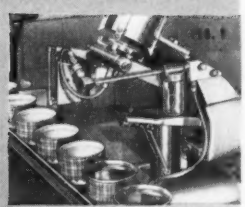

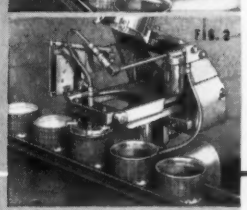

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★ Versatile—Single line design is expandable to twin line—doubles your production.

★ Positive Cup Dispenser—Handles all styles of round, nesting containers.

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DSIR 59

Sweetener Horizons . . . What can food processors expect from today's sugar research?

Says Dr. Katheryn E. Langwell, who has just become research director of Refined Syrups & Sugars, Inc.: "Development of new sugars is opening new vistas to producers of quality foods.

"To cite just one instance, now in research and pilot plant stage are new crystalline sugars that will find eager application by chocolate manufacturers—because of their ease of reduction to powdered form."

Dr. Langwell was associated with the late Dr. Stroud Jordan, director of Applied Sugar Laboratories and Stroud Jordan Laboratories. She was co-author with Dr. Jordan of the book, *Chocolate Evaluation*, and later collaborated with him on *Confectionery Analysis and Composition*.

She now chairmans the Stroud Jordan Award Committee, American Assn. of Candy Technologists.

Dr. Katheryn E. Langwell

Her other works include a glossary of candy technical terms, and *Confections in the Diet*, the latter published in '58 as part of a compilation, *All About Candy and Chocolate*, by Philip P. Gott.

Industry

Alford Refrigerated Warehouses has broken ground for giant new warehouse in Corpus Christi, Tex. Capacity is 1.1 million cu. ft. in layout "substantially bigger than a football field."

Anheuser-Busch, Inc., has begun first pilot runs at its newly dedicated Tampa, Fla., Industrial Park plant. Completion of total facilities is expected around June 1.

A & P Tea Co., celebrating its centennial this year was recently honored by Tri-State Packers Assn. at a special luncheon meeting.

Armour & Co. directors have authorized purchase of **Pfaelzer Bros., Inc.**

Birds Eye Div., General Foods Corp. will pack and distribute Chill-Ripe Punch frozen concentrate as per agreement with **Frosted Fruit Products Co.,** Los Angeles.

Canada Dry Corp., N. Y., and **Consolidated Foods Corp.,** Chicago, are among companies which have recently set up programs whereby employees may purchase diversified stocks via payroll deduction.

Gerber Products Co. has announced licensing arrangement with **Gordon Edgell & Sons, Ltd.,** Australia. Agreement provides for Australian firm to use Gerber's baby food trademarks and patents, and for Gerber to supply technical guidance. Complete line of baby foods will be marketed throughout Australia under Edgell-Gerber label.

Hardee Farms International has been formed from merger of **Durrance Ranch,** Lake Placid, Fla., with 3 Canadian vegetable-producing and packaging organizations. President Bram Dees is a director of **Salada-Shirriff-Horsey,** and president and managing director of **York Farms.** Among directors also is Grant Horsey, president of Salada-Shirriff-Horsey.

Associated Industries

Commercial Discount Corp., Chicago, will offer long-term (5-yr.) capital financing to growth corporations in food processing. Minimum to any one company will be $100,000, and maximum $1 million. President Sidney Feuchtwanger states: "After a year of experimentation, we have decided that long-term 5-yr. capital loans to growth companies in manufacturing and distributing are feasible and sound."

Continental Can Co. will get Lockheed jet plane in 1961, said to be first American-built pure jet airliner for use as an executive transport.

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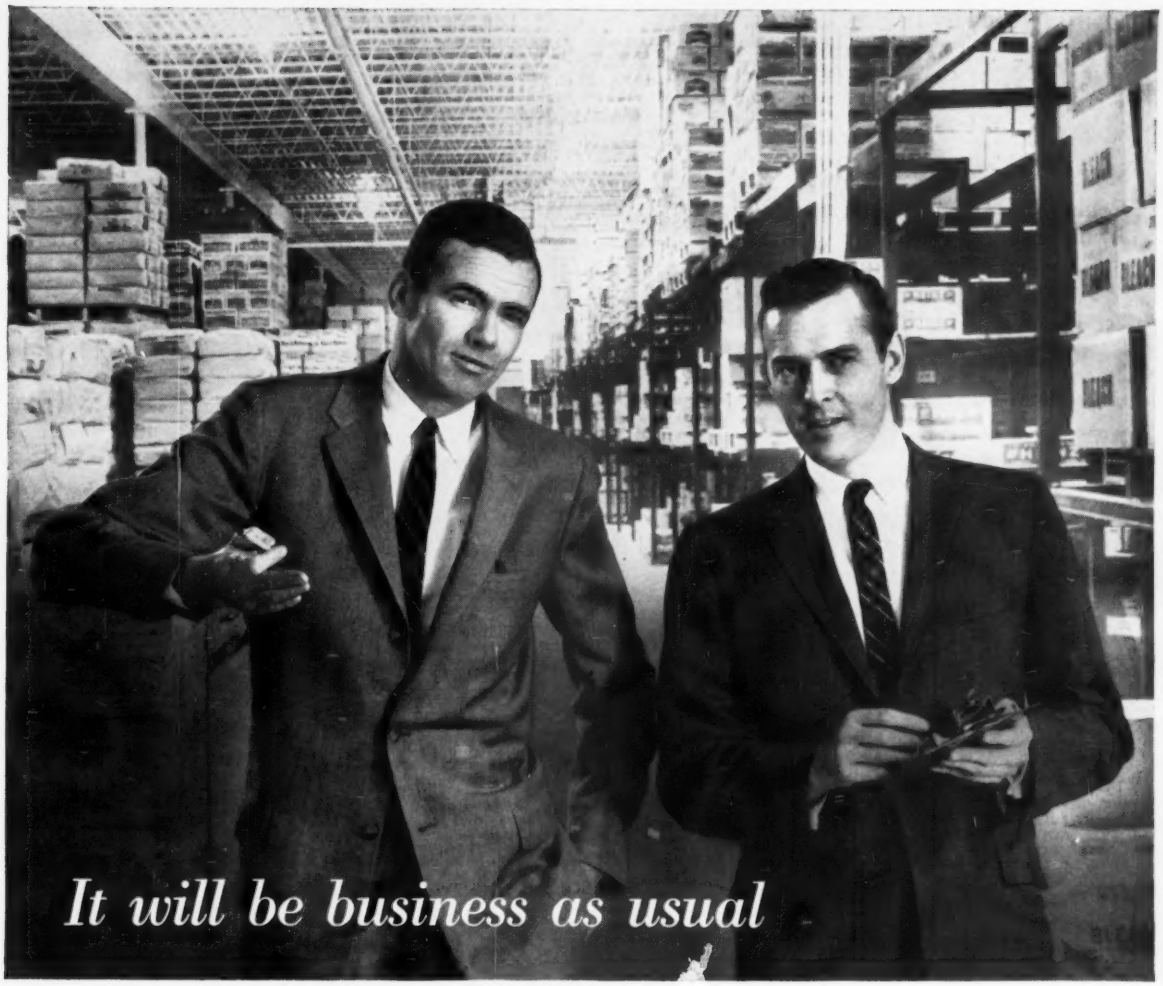
Trucks

Dodge "Job-Rated" trucks make servicing easy, too! The exclusive Dodge full-width hood rises a full 90 degrees—it's like taking the top completely off the engine compartment. For routine checks of battery, oil and water, hood opens to a regular 45-degree angle. It's the industry's most functional hood!



at Smith & Cross

. . . with the help of the Ætna Life's Business Planning Department

Arthur H. Smith and Robert Cross are partners in a food wholesaling business. Their company has grown over the years and looks to a prosperous future. Both Smith and Cross are known as good businessmen. They are aware that when either of them dies the partnership, by law, ceases to exist. The surviving partner and the heirs of the deceased partner are left to pick up the pieces. Therefore, with the help of their Ætna Life representative, attorney and accountant, they set up a plan to assure continuation of the business and security for their own families. If you own or operate any kind of business, it will pay you to investigate the vital need for a business continuation plan — and no one is better equipped to serve your interests than the Business Planning Department of your local Ætna Life General Agency.

ÆTNA LIFE
INSURANCE COMPANY

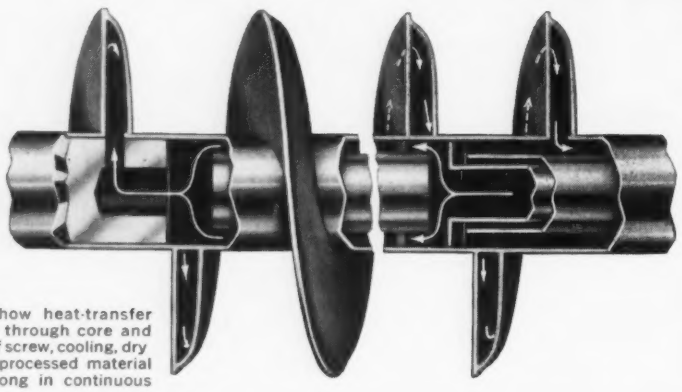
Affiliates: Ætna Casualty & Surety Co. • Standard Fire Insurance Co. • Hartford, Conn.

For more data, circle 313 on Reader Service Card

Do HOLO-FLITE savings like these suggest profit-boosting applications in YOUR plant?

Holo-Flite—the revolutionary screw-conveyor-type heat exchanger that cools, dries or heats materials in continuous bulk flow, has many applications throughout the process industries—applications that save time, save space, save labor and improve product quality. For example, in the Sugar industry alert operators have found Holo-Flite the ideal solution to a wide range of processing problems . . .

holo-flite* INSTALLATIONS IN SUGAR INDUSTRY NOW COOL 1.6 BILLION POUNDS PER YEAR!



Arrows show how heat-transfer medium flows through core and hollow blades of screw, cooling, drying or heating processed material as it moves along in continuous bulk flow.

In the Sugar industry alone, Holo-Flite equipment cools more than 1,600,000,000 lbs. a year. And this is just one of many industries where Holo-Flite's many installation and operating advantages are making major savings possible.

*"Holo-Flite" T.M. Reg.

HOLO-FLITE

IN-PROCESS USE

- Holo-Flite cools granulated or powdered sugar with equal ease!
- Discharge can be directed into multiple points of use, and dehumidified air is seldom necessary!
- Ideal for pre-cooling sugar going into cake mix and confection-coating processes!
- In candy making, Holo-Flite cooled sugar prevents distillation of essences and delicate flavors!
- With Holo-Flite, sugar is cooled as needed, eliminating costly bulk refrigeration prior to use!

HOLO-FLITE

BASIC SUGAR PRODUCTION

- Sugar cooled by Holo-Flite is free-flowing for quick, simple bulk car loading!
- Quality is uniformly high without perceptible crystal degradation!
- Cooling method is dust-free, eliminating need for troublesome bag collectors!
- Efficient Holo-Flite design permits easy clean-out (although this is generally unnecessary)!
- Holo-Flite can easily be mounted on loading bridge over hopper cars to maintain outlet temperature levels from cooler to car!
- The Holo-Flite heat exchange principle is equally adaptable to use of cooling tower water, refrigerated water systems or recirculated refrigeration media!

Let us send you descriptive literature and make recommendations for your processes. No obligation, of course!

COTTRELL Electrical Precipitators
MULTICLONE Mechanical Collectors
CMP Combination Units
DUALAIRE Jet-Cleaned Filters
THERM-O-FLEX Hi-Temp Filters
TURBULAIRE-DOYLE Scrubbers
HOLO-FLITE Processors
HI-TURBIANT Heaters

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PRECIPITATION
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Engineers and Constructors of Equipment for Collection of Suspended Material from Gases . . . and Equipment for the Process Industries

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Precipitation Company of Canada Ltd., 8285 Mountain Sights Avenue, Montreal 9

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NEW EQUIPMENT & SUPPLIES

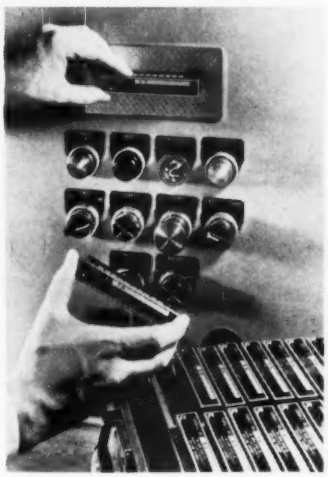
6-Station Package Freezer

A self-contained double-contact food package freezer (Model 2735-6) is newest addition to the 'Freze-Cel' refrigeration line.

Each of freezer's six stations takes 40 packages (4x5¼ in.), giving a total cabinet loading of 240. The plates' 'Thermo-Film' feature is stated to speed freezing 10%.

Unit is powered by 7½ hp. semi-hermetic water cooled compressor using R-22 refrigerant. All components, both refrigerating and hydraulic, are self-contained in freezer. Overall dimensions: Height 73½ in., depth 46 in., width 51 in.—*Dole Refrigerating Co., 5910 N. Pulaski Rd., Chicago 46.*

Circle 43 on Reader Service Card



↑FORMULA CHANGE is simple.
←PLUGS are easily inserted.

Batch Control Simplified to Mere 'Plug-In'

An advanced process-control component—the Batchplug—now enables instant changes of formulas. And no special skill is required to adjust and operate the system.

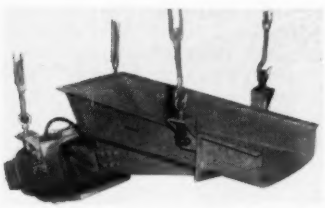
Each compact plug-in unit (first photo) is a self-contained formula providing complete pre-set control for the several ingredients required per formula. A nameplate on each unit gives quick identification when selecting from convenient rack.

A small screwdriver (second photo) is only tool needed to set a plug for proper control over any batching operation. Ingredient quantity adjustments are simply made by turning screws. Individual plugs can be sealed within one graduation for compliance with batching regulations. Formula privacy is also retained through sealing.

This method, says manufacturer, greatly simplifies electric circuitry and reduces control-cabinet size, thus providing substantial economies. Accordingly, automatic batching is seen brought within the range of smaller firms.

Five basic Batchplug models are now available to control up to ten separate ingredients on three scales. —*The Howe Scale Co., Rutland, Vt.*

Circle 45 on Reader Service Card



50 Tph. Vibrating Feeder

This heavy duty vibratory feeder readily handles flows of 50 tons-hr. Named the Hi-Vi, it is supplied either mounted on a base or in suspended form (photo).

Unit employs top power electro-permanent magnetic drive system operating directly from an a.c. line without rectifier.

Spring system is of long-lived epoxy-boned glass fiber. All-welded trays come in both flat models (18x 42 in. and 12x60 in.) and tubular types (12x36 in. and 8x60 in.).

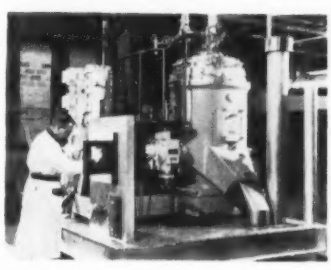
Though essentially a feeder unit, unit is termed equally suitable for spreading, drying, and agitating functions. Quiet operation is cited. —*Eriez Mfg Co., Erie 6, Pa.*

Circle 44 on Reader Service Card

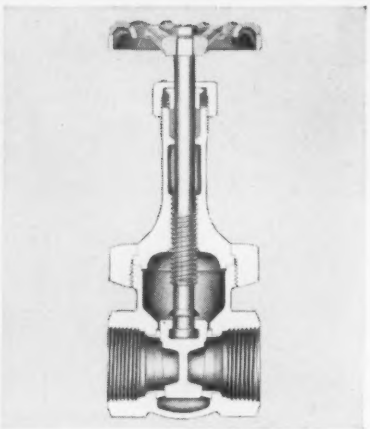
High-Rate Test Centrifuge

Now available (rental basis) for process piloting tests is this advanced portable high-capacity centrifuge. Designated the Titan CNS-150/151, it will handle 3-6,000 gph.

A self-cleaning disk-type machine, it develops a settling force of 7,800 tons gravity. Baffles direct product flow radially. Solids, which collect



Expanded-type body rings. Made from Crane Exelloy—a 12% chromium stainless steel. Provide a hard surface that resists abrasive damage, indentation and scoring by foreign matter. Rings are rolled in, can't work loose. Seating wear is taken by easy-to-replace bronze disc.



Quality in every detail inside and out. In rising and non-rising stem patterns—¼ to 3 inches—screwed ends. Working pressures: 200 lb. steam, 550° F.; 400 lb. non-shock cold water, oil, gas and air, 150° F.

Cylindrical body shape. Proved on high-pressure steel valves. Increases body strength without adding bulk. Distributes pressure uniformly. Reinforces seating area against distortion and chance for leaks.

12% chromium stainless steel seat rings make Crane 200-pound bronze gates last longer

Here is a close-up of Crane quality that shows you why these 200-pound bronze gate valves perform more dependably than ordinary bronze valves, with less maintenance.

For example, instead of integrally cast seats, they have long-wearing 12% chromium stainless steel body rings. Rings are rolled in... can't work loose in service. This also prevents leakage around rings. The quickly replaceable bronze disc takes normal seating wear.

Crane 200-pound bronze valves are competitively priced with bronze valves which do not have these and other important features. Why pay for less than Crane offers you? For complete facts, see your Crane Representative.

Write for Circular AD-2285. Gives complete technical data on both rising and non-rising stem patterns.

CRANE® VALVES & FITTINGS

PIPE • PLUMBING • HEATING • AIR CONDITIONING

Since 1855—Crane Co., General Offices: Chicago 5, Ill. Branches and Wholesalers Serving All Areas

between vanes around outer wall of bowl, are periodically ejected by automatic controls.

Machine has been proved out on difficult food-material clarifications, concentrations, and extractions. Distributor furnishes services of a technician during setup and initial runs. —*The Pfaudler Co., 1086 West Ave., Rochester, N. Y.*

Circle 46 on Reader Service Card

Tight-Aisle Sweeper

Rider-type sweeper particularly designed for cleaning congested areas is this vacuum-equipped Model 53. Path 28-in. wide is covered by main brush, with extension to 40 in. using rotating sidebrush.

Unit is powered by 7-hp. aircooled engine. Front-wheel drive is incorporated for climbing ramps. Dual foot pedals control forward and reverse movements, sweeper speed and braking.

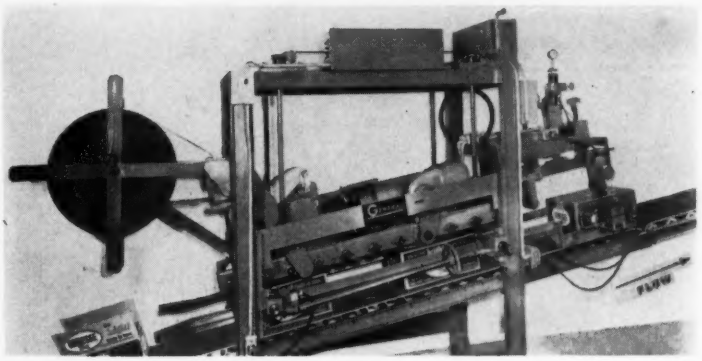
Sidebrush, which enables machine to sweep flush with walls and pallets, throws dirt directly into removable 4.5 cu. ft. hopper. Vacuum (430 cfm. fan) sucks up fine dust and grit.

Sweeper brushes are cylindrical fiber and/or wire units. They can be changed in 5 min.—*G. H. Tennant Co., 721 N. Lilac Dr., Minneapolis 22.*

Circle 47 on Reader Service Card

Want More Information?

It's free—and easy to get. Simply note here the items on which you want more details, then circle each key number (there's one at the bottom of each item) on the handy Reader Service Postcard—back of book. Then sign your name and address and mail. For more convenience, too, these items are listed and keyed in the Reader Service Section.



'Single-Strip' Case Sealer

This new automatic case sealer applies gummed tape to join top flaps of filled corrugated containers, then rolls extend ends of tape over and onto end panels for complete single-strip sealing. Capacity: Up to 30 cpm.

Length of machine (excluding tape cage over-hang) is 7½ ft., and width is 3 ft. Unit illustrated operates on uphill travel, being designed for installation where existing conveyor line had to be straddled.

Machine can be fitted to apply tear-band simultaneously in one operation down middle of sealing tape. —*General Corrugated Machinery Co., Palisades Park, N. J.*

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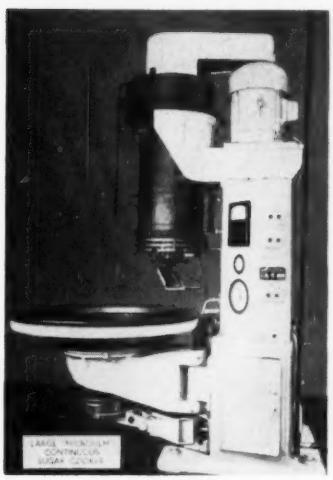


Thin-Film Sugar Cooker

Various-formula boiled sugars, termed comparable to those made by open-fire method, are turned out by this automatic cooker called the "Microfilm." Capacity is put at "1,000 lb./hr. and better."

It's stated unit will handle even formulas combining sugar, molasses, milk, and butter without danger of carbonization.

No vacuum or pressure is needed for cooking—only a steady supply of dissolved sugar for continuous operation. Unit is thus applicable for candy production lines and other processing such as sugar coating of cereal.

Fast heat transfer and rapid cook are achieved by use of centrifugal principle to spread sugar in a very thin film on the cooking cylinder's surface. Result is crystal-clear colorless product of new high quality.

Made by Baker Perkins (Export) Ltd., London, machine is distributed in U.S. through *Jabez Burns & Sons, Inc., 11th Ave & 43rd St., N. Y. C.*

Circle 49 on Reader Service Card

Fork Lift for Tight Areas

Narrow-space operations are the forte of a newly announced 3,000-lb. capacity lift truck. Known as the FTB 30-15, it is but 32 in. wide and 83 in. high (lift gear lowered). Further, this truck can be turned in a minimum radius of 64 in.

Power is furnished by 4-cyl. engine delivering 35 bhp. at 2,400 rpm. and 97 ft.-lb. torque at 1,400 rpm. Both gasoline and LP fuel models are offered.

"Extra lift" mast, standard on unit, provides maximum stacking height of 131¼ in., and there are 16½ in. of free lift. Attachments available include side shifters, crane arms, and rams. — *Engine-Material Handling Div., Allis-Chalmers Mfg. Co., Milwaukee.*

Circle 50 on Reader Service Card

Grease just can't get through this Daniels Wrap made of greaseproof bacon-pak

THE FULL BLOOM OF FLAVOR STAYS

. . . and stays . . . and stays whenever bacon is wrapped and sealed in a protective Daniels Wrap.

Whatever your needs in flexible packaging, our artists and craftsmen will design and print the showmanship needed to satisfy the most discriminating shopper. Contact the nearest Daniels sales office today or write Daniels, Rhinelander, Wisconsin.

Sales offices: Rhinelander, Wisconsin . . . Chicago, Illinois . . . Haverford, Pennsylvania . . . Akron, Ohio . . . Omaha, Nebraska . . . Dallas, Texas . . . Los Angeles, California

DANIELS

MANUFACTURING COMPANY
RHINELANDER, WISCONSIN

creators • designers
of flexible packaging
multicolor printers

MEMBER OF WISCONSIN PAPER GROUP FOR BETTER POOL CAR SERVICE

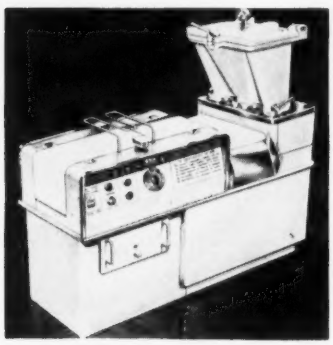
Top-Power Floor Cleaner

More suction and simpler operation are features of this new model "Floo mobile" cleaner. And being "vertically compact" in design, it readily works narrow and congested areas.

New, too, is unit's longer-lasting filter, which can be cleaned without removal from machine.

Standard on models is the Litter-door Nozzle, which opens by remote control so that bulky trash can be sucked in along with dust and dirt. —*Handling Devices Co., 34 Concord Lane, Cambridge, Mass.*

Circle 51 on Reader Service Card



Cuts Bread 'Giveaways'

In-line checkweighing and controlled adding of dough increments is achieved with this new automatic bakery unit. Maker states it cuts "overscaling"—commonly running ½ oz. per loaf—by some 50%, thus saving thousands of dollars yearly for volume-output bakeries.

Machine weighs each dough piece as it leaves divider and electronically

The best place to get the steel you want when you want it— is your LOCAL STEEL SERVICE CENTER

525 independent steel warehouse companies, which operate 900 separate steel service centers throughout the United States, maintain an $800 million inventory of more than 3,000,000 tons of steel in all forms, sizes, types, finishes and analyses. No matter where you are located, your local steel service center is best equipped to supply all your metalworking needs, both from the standpoint of economy and quick delivery. Some 15,000 metal specialists selling for these distributors are fully qualified to help you with your problems of selection and fabrication.

AMERICAN STEEL WAREHOUSE ASS'N

STAINLESS STEEL is stocked in 252 of these Steel Service Centers, many of which carry MICROROLD Stainless sheet and strip made by the Washington Steel Corporation.

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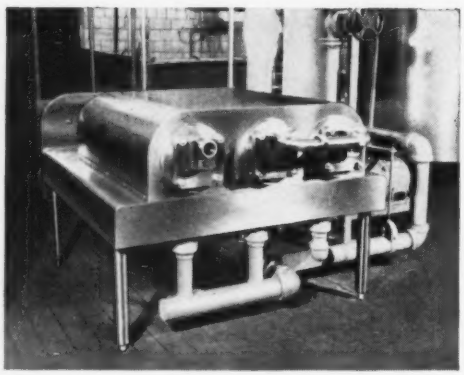
WASHINGTON STEEL CORPORATION

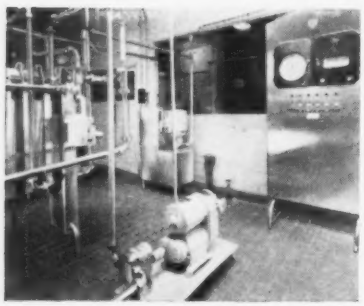
4-W Woodland Avenue • Washington, Pennsylvania

MANUFACTURING

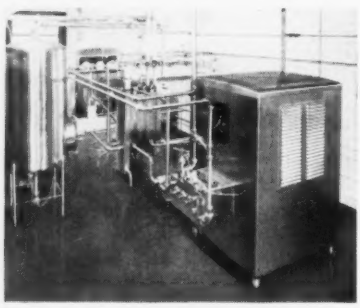
4 Creamery Package Units for Profitable Processing



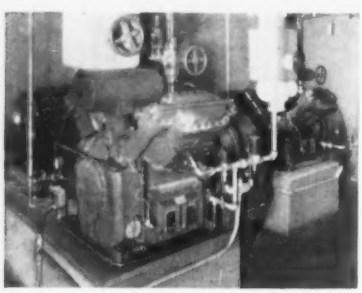
SWEPT-SURFACE® HEATER and COOLER—
provides economical continuous heating and cooling of liquids or semi-solids; −30° F. to 300° F. Blades continuously sweep product from heat transfer surface—eliminate "burn-on" during heating, increase product yield. Bulletin E-1300.



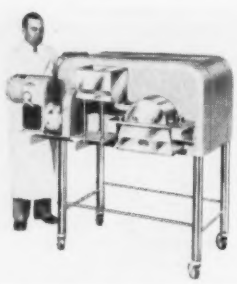
SANITARY POSITIVE PUMP
New rotors have specially designed resilient surfaces, save wear on case. Ideal for metering flow of liquids. Quick, on the job parts replacement. Also available in single-lobe model for large-piece products. Bul. H-1290.



HIGH EFFICIENCY HOMOGENIZERS
Completely redesigned for smoother, more efficient homogenization at much lower pressure than others. Reduces power costs and machine wear. Includes revolutionary, high capacity 5-cylinder models. Bul. N-1292.



ENGINEERED REFRIGERATION
For any temperature −60° F. to +50° F. Compact design saves space—extra rugged construction saves maintenance. Full line of compressors, boosters and 2-stage combination package units. Write for bulletins.



COGMILL GRINDER-BLENDER
Grinds and blends solids, emulsions, or liquids to any consistency; particles .020" to 1" diameter. Sanitary, stainless steel product surfaces. Portable or fixed mountings. Bulletin N-1406.

THE *Creamery Package* MFG. COMPANY

General and Export Offices:
1243 W. Washington Blvd., Dept FP, Chicago 7, Ill.
CREAMERY PACKAGE MFG. CO. OF CANADA, LTD.
267 King St. W., Toronto 2B, Ontario

THE MARK OF DISTINCTION IN FOOD PROCESSING EQUIPMENT

Equipment & Supplies

signals (1) passage of piece, (2) addition of increments (either one or two) by correcting unit to bring up weight, or (3) rejection of piece if it's overweight or grossly underweight. Increments are imbedded positively in dough and sealed by rounder.

Weights are averaged, as machine continues to operate, and corrections are automatically fed back to readjust divider as required.—*Stokes & Smith, FMC Pkg. Mach'y Div., 4900 Summerdale Ave., Phila. 24.*

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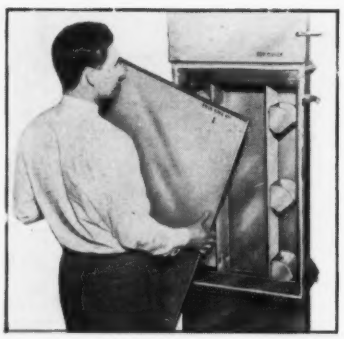
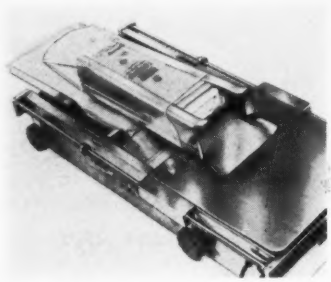


Quick-Clean Bucket Lift

Bulk-material bucket elevators of new "V" Series employ removable covers held by quick-opening toggle clamps. Thus, elevator side may speedily be stripped down for thorough cleaning. Different types and sizes are offered to fit specific needs. —*The Bucket Elevator Co., 360 Springfield Ave., Summit, N. J.*

Circle 53 on Reader Service Card



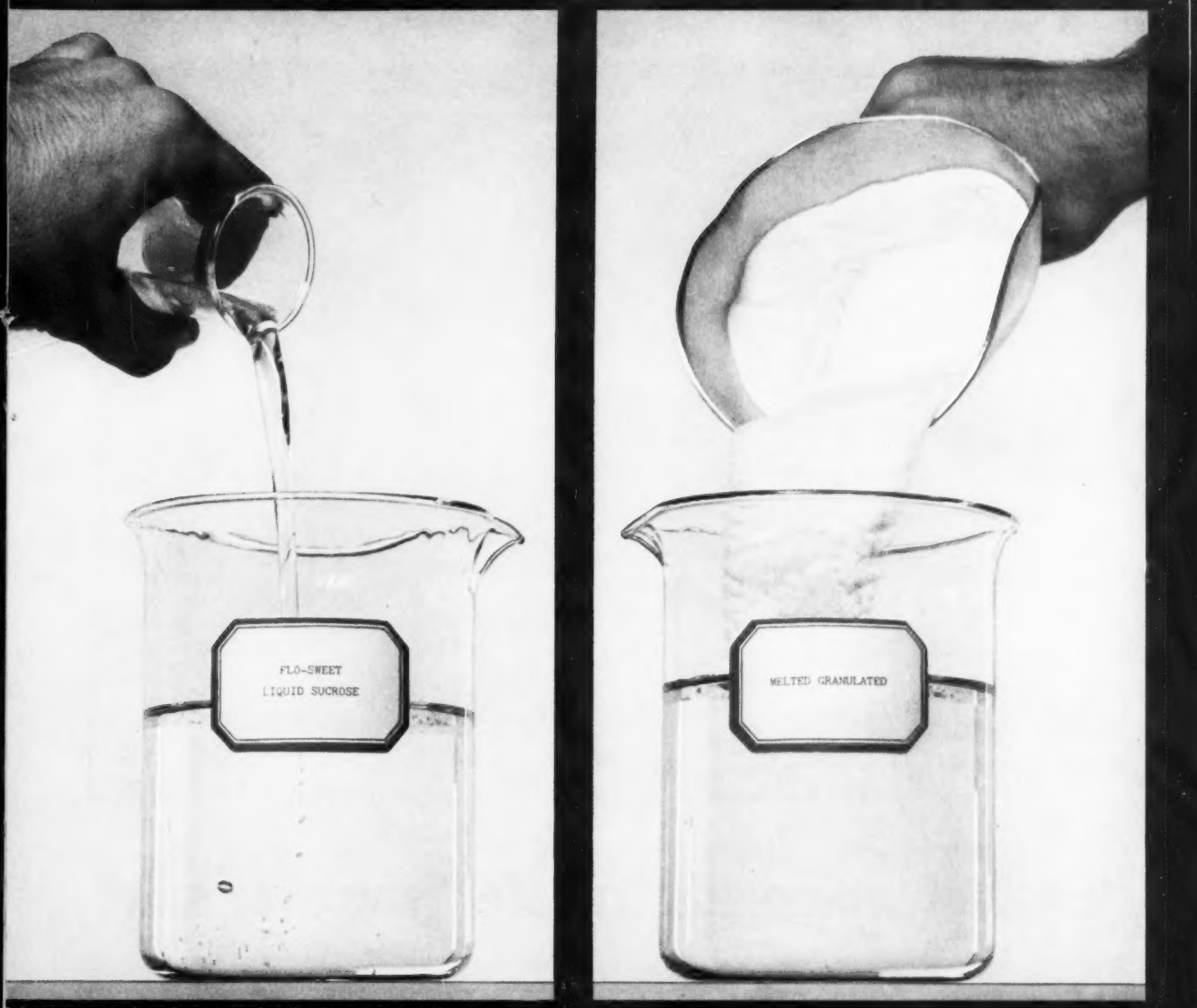
Speedy Film-Bagging Unit

A wide range of meat products can be packaged at high speed by this tight-to-product film-bagger.

Tradenamed the Tele-Sonic, machine is a semi-automatic for handling such items as sausages, franks,

For more data, circle 318 on Reader Service Card

For more data, circle 319 on Reader Service Card →



Color plates made direct from unretouched Ektachrome transparencies

TALK ABOUT SUGAR

The sparkling white crystals of granulated sugar have long been regarded as an informal standard of purity. But when dissolved in water, they show a certain amount of color. And color is one indication of sugar purity.

Today's quality liquid sugars far exceed many of the accepted specifications for granulated. A further practical consideration is that even the water in many liquid sugars is refinery purified.

For more than a quarter century Flo-Sweet has been the pioneer in the development of truly top quality liquid sugars. As the photograph on the left shows, Flo-Sweet today is so pure that it is hardly distinguishable in color from distilled water!

With today's trend toward higher and higher quality, only the best ingredients are good enough for the discriminating food producer. We invite you to compare Flo-Sweet with any other sugar, liquid or granulated, on any basis that you choose: color, taste, or laboratory analysis. We believe you will be impressed by the results.

For this is true sugar quality. You can *see* the difference.

FLO-SWEET

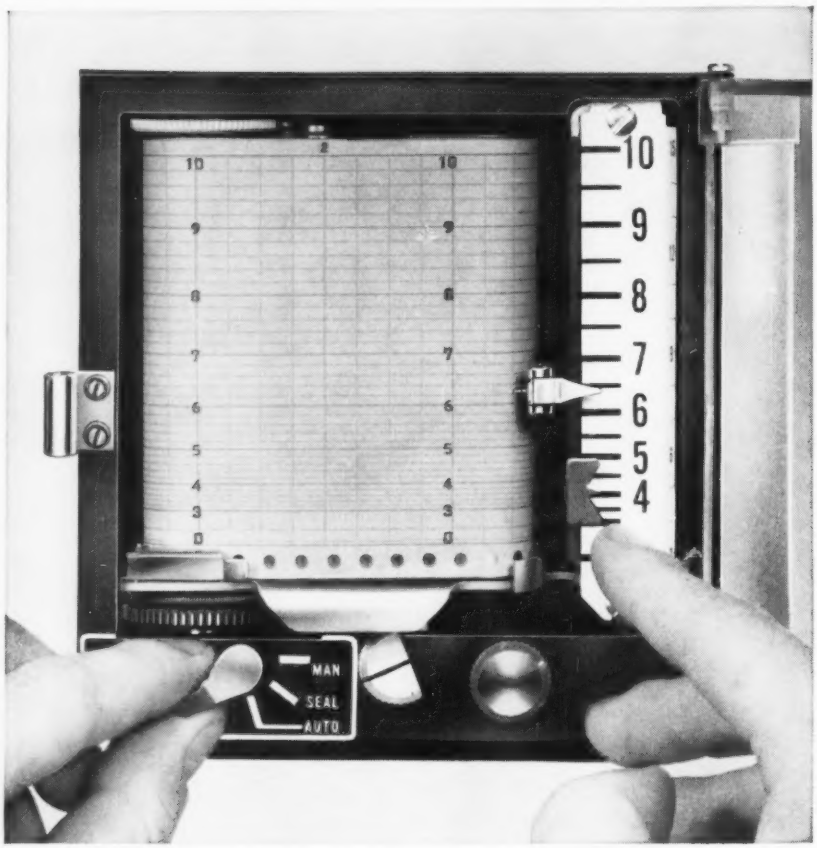
FIRST IN LIQUID SUGAR

REFINED SYRUPS & SUGARS, INC.

YONKERS, NEW YORK

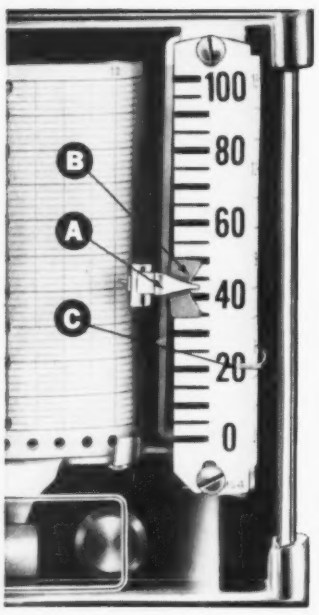
SERVING INDUSTRIAL SUGAR USERS EXCLUSIVELY FROM
YONKERS, ALLENTOWN, DETROIT, TOLEDO

One of 38 Metagraphic Receiver Models you can choose from, all with only 5" x 5¼" panel. This model has single-knob, six-position transfer station for completely "bumpless transfer" in cascaded control systems.



BRISTOL METAGRAPHIC RECEIVERS:

"Easiest 'bumpless transfer' you ever saw"



Variable (A), set point (B), and valve position (C), all on same scale, make manual-automatic transfer easy.

That's what instrument men say after trying the Bristol Metagraphic Pneumatic Receiver—even in cascade control systems.

Just seal, match pointers, transfer. There's not a single value to read. That's because the Metagraphic gives you valve position, set point and measured variable —*all on the same scale.*

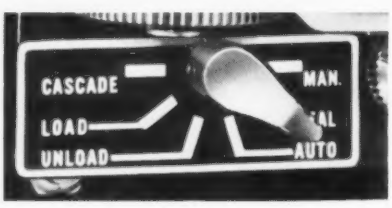
No finger-disconnects here! The Metagraphic is a true plug-in receiver—plugs and unplugs in 5 seconds with no loss of automatic control.

You can switch from indicator to recorder in less than 10 seconds, interchange many receiver models, change range simply by changing chart. Cuts down on costly reinstallations if process requirements are changed.

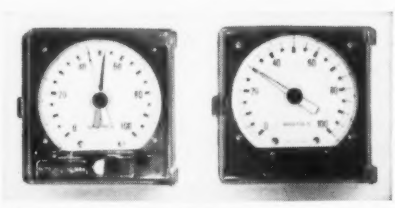
Write today for the complete Metagraphic story. Don't forget, Bristol offers the widest selection of miniatures on the market. (Full sized instruments, too.) The Bristol Company, 115 Bristol Road, Waterbury 20, Conn. B-18

BRISTOL TRAIL-BLAZERS IN PROCESS AUTOMATION

AUTOMATIC CONTROLLING, RECORDING AND TELEMETERING INSTRUMENTS



Six-position transfer station (enlarged view) for cascade service. Three-position manual-automatic station is also available.



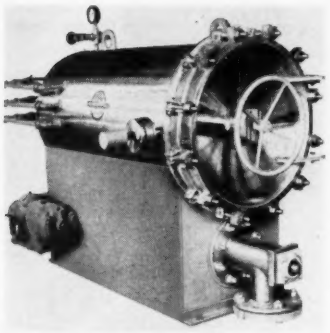
Metagraphic Indicating Receivers have full 9-inch scale for easy reading; feature complete 10-second interchangeability with recorders.

For more data, circle 320 on Reader Service Card

sliced meats, and the like, at 500-plus packages an hour. Both feed-up and air-jet opening of bags are automatic, then metal arms guide product inside.

Knurled knobs permit quick adjustment of machine to take different size bags and products.—*Tele-Sonic Packaging Corp.*, 208 W. 27th St., N. Y. C.

Circle 54 on Reader Service Card



Versatile Easy-Clean Filter

Exceptional cake stability, through use of plates that position horizontally, is reported attained with this new type diatomite filter, the Model HR.

Further noted is unit's automatic ejection, via screw conveyor, of spent cake as a powder after it has been blown dry.

Machine is fully enclosed pressure type that is readily cleaned following vertical positioning of plates. Cake is completely removed without opening filter.—*Sparkler Mfg. Co., Mundelein, Ill.*

Circle 55 on Reader Service Card

Lift for 'Low-Bridge' Work

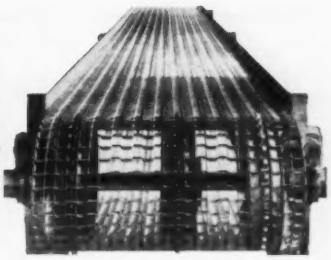
Tight-headroom tasks don't faze the new low-silhouette Clarklift ECLS fork trucks (photo).

Electrically powered, they're offered in 2, 3, and 4,000-lb. capacity models that measure only 71 in. to

engineered for trouble-free service

LA PORTE

FLEXIBLE STEEL CONVEYOR BELTING



Built to last, this long-wearing, flexible steel belting resists impacts at the loading hopper and on the shipping dock. It remains free from distortion and flexible under extreme temperature changes. Besides, it maintains a perfectly flat surface for containers empty or filled.

The open mesh feature, which assures a positive drive on the sprocket, permits the circulation of air and liquids around products in process. Also, facilitates sterilizing with steam gun while in motion.

The endless belt for endless service in canning, freezing, pickling and dehydrating.

Made of galvanized steel of the best quality, La Porte belting is available in ½" x 1", or 1" x 1" in any length and practically any width.

LA PORTE

Ask your Mill Supplier or write for illustrated literature, prices.

MAT AND MFG. CO.

BOX 124 *La Porte, Indiana*

For more data, circle 321 on Reader Service Card

how to apply low cost VARIABLE SPEED to your product

This 16-page catalog covers a wide range of practical information on how to get the most from your electric motors . . . variable speed, instant control, reversing, increasing torque, clutching, presetting RPM's, remote control, measuring torque . . . and other items. It also illustrates and describes Zero-Max variable speed controls for fractional horsepower motors.

SEND FOR YOUR FREE COPY NOW!

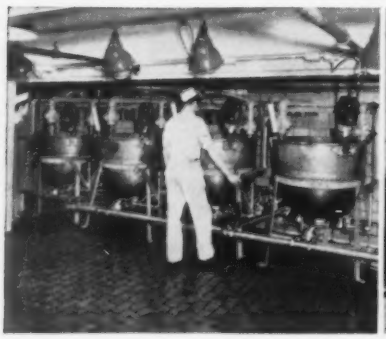
Zero-Max **REVCO Incorporated**

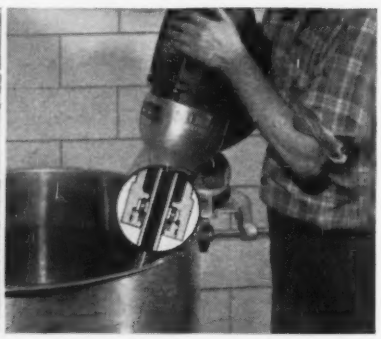
1920 Lyndale Ave. So.
Minneapolis 5, Minn.

For more data, circle 322 on Reader Service Card

How to choose a portable mixer

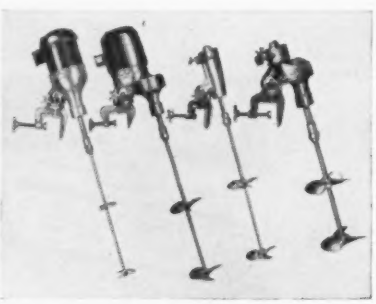
To get your money's worth, ask yourself these questions...





1. Will it mix my materials efficiently? Your mixer must set up just the right *balance* of fluid flow and turbulence for the result you want. You get this balance with a LIGHTNIN Portable Mixer. Selected by scientific methods, it's *guaranteed* to do the job right.

2. How is the shaft supported? Is the mixer built to protect the motor against the strain of radial shaft loads? You'll find this vital safeguard in LIGHTNIN Mixers. An extra ball bearing here steadies the shaft for true running—adds years to motor life.



3. What about adjustability? You can quickly swing a LIGHTNIN Portable to any angle for the exact kind of mixing you want—slow roll, vortex, or rapid top-to-bottom turnover. Universal ball-and-socket clamp tightens without wrenches—stays tight.

4. How much choice do I have? With LIGHTNIN Portables you can choose from *thirty* models, ⅛ to 3 HP. Direct or gear drive; electric or air motor. Shafts and propellers in all alloys and coverings. There's a LIGHTNIN Mixer to handle any job.

5. Where can I get prompt service on fluid mixing? Just call your LIGHTNIN Mixer representative. He can quickly give you a guaranteed recommendation. And he's near you—look him up in Thomas' Register or the yellow section of your telephone directory. Or write us direct.

LIGHTNIN®
MIXERS AND AGITATORS
MIXCO
Fluid Mixing Specialists

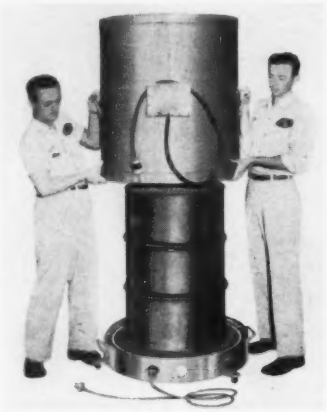
MIXING EQUIPMENT Co., Inc., 143-d Mt. Read Blvd., Rochester 3, N.Y.

In Canada: Greey Mixing Equipment, Ltd., 100 Miranda Ave., Toronto 19, Ont.

top of overhead guard. Thus, with free lift in upright, stacking as high as 51 in. is permitted in a 72-in.-high trailer.

For ease of maintenance, all components are readily accessible. Carbon pile drive control provides smooth acceleration and enables precise "inching." "Deadman" brake goes on automatically when driver leaves seat.—*Indust. Truck Div., Clark Equip. Co., Battle Creek, Mich.*

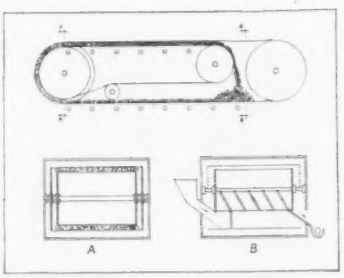
Circle 56 on Reader Service Card



Quickly Melts Drum Goods

Shortening or gelatinized food materials cold-stored in drums are speedily liquefied by this handy heater. Base and hood are of aluminum for easy handling. Unit's closely spaced heating coils assure uniform meltdown.—*Glas-Col Apparatus Co., 711 Hulman St., Terre Haute, Ind.*

Circle 57 on Reader Service Card



Belt-Within-Belt for Drying

Drying machine of radical design employs two wire-mesh belts, one arranged to turn within the other.

Thus, mass of solid particles is moved in a thin layer between the two belts in a recirculating cycle as hot air is blown through the product.

CLINTON
can do it with CORN

destination?

a candy bar or a wonder drug

Clinton Products go into the making of many good things. Yours?

It has been said, "Wherever you may be and whatever you touch, one or more products of corn enter into its manufacture." The fabric from which your shirt is made was woven with the aid of starch. Starch gave it the fine finish at the laundry. The cigarette you smoke, the magazine you read, the food you eat, the beverage you drink—yes, the candy with which you treat your youngster or the antibiotic in your doctor's prescription depended in some way on a product that was made from corn.

Corn is our business at Clinton. In our modern plant we produce the finest of products from corn—under the strictest system of quality control. And, Clinton research *today* improves *tomorrow's* product for you.

Clinton Serves the FOOD Industry

Clinton corn syrup and dextrose are used by leading packers of fruits and vegetables to improve the color, flavor and texture of their products. Clinton's uniformly controlled, quality products will meet your manufacturing requirements. Consult your Clinton salesman. He will provide product information, arrange for prompt technical service, or assist you in any way possible.

CLINTON CORN PROCESSING COMPANY
CLINTON, IOWA

CORN SYRUPS
DEXTROSE • STARCHES • DEXTRINS
SUGARS • OILS • LACTIC ACID
AND OTHER PRODUCTS FROM CORN

CLINTON

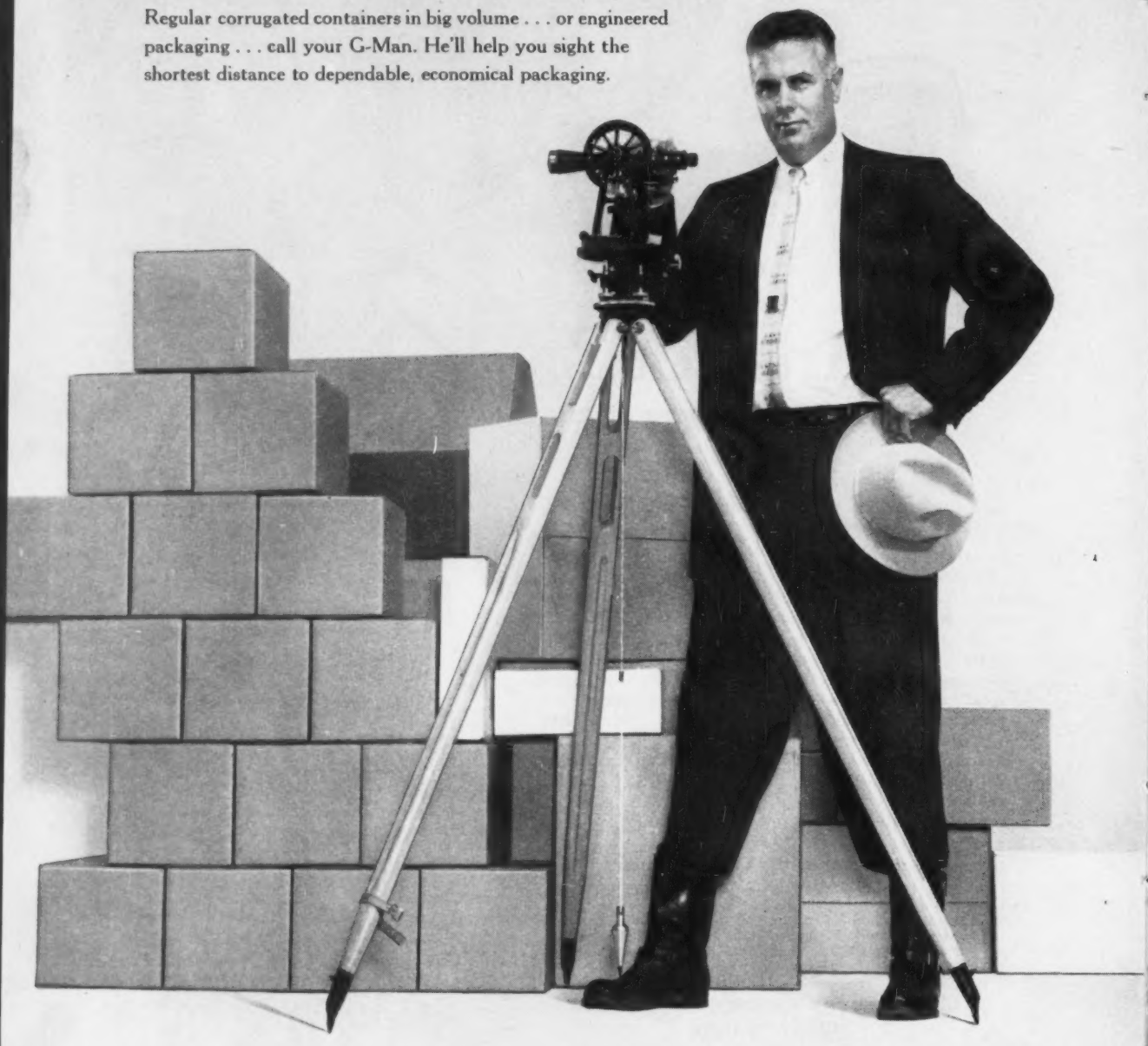
If you can do it with CORN you can do it better with CLINTON

For more data, circle 324 on Reader Service Card

GAYLORD SIGHTS IN ON YOUR PACKAGING OBJECTIVES

Gaylord first surveys your packaging and handling operations. Then research and engineering team up to evaluate findings, coordinate results with newest Gaylord packaging developments . . . and recommend corrugated containers of highest efficiency, at lowest cost.

Regular corrugated containers in big volume . . . or engineered packaging . . . call your G-Man. He'll help you sight the shortest distance to dependable, economical packaging.



GAYLORD CONTAINER CORPORATION

Gaylord Boxes

HEADQUARTERS, ST. LOUIS
PLANTS COAST TO COAST

DIVISION OF **Crown Zellerbach Corporation**

Material circulates as shown in top sketch above, while end cross-sections are detailed in insets (A) and (B), with latter depicting feed and discharge.

Developer, S. Blickman, states unit handles both bulk-solid and finely divided particles of fruits and vegetables.—*Dual Belt Machinery Co., c/o Wertheim & Co., 120 B'way, N. Y. C.*

Circle 58 on Reader Service Card

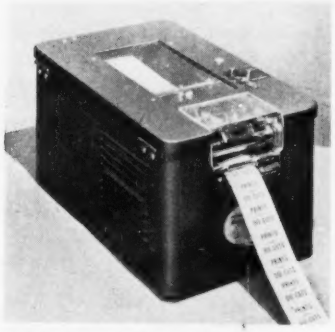


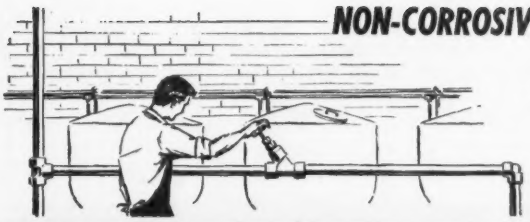
Table-Top Label Maker

Labels are turned out in volume directly at point of use by this Printamatic. Machine prints, die-cuts, and dispenses pressure-sensitive labels from roll tape. Rate is 110 average-size labels a minute. Special smudge-proof ink requires no drying after printing. Simple adjustments permit fast change of label.—*W. H. Brady Co., 727 W. Glendale Ave., Milwaukee 9.*

Circle 59 on Reader Service Card

Tele-Flashes Scaling Data

A new stock-in-motion weighing system hooks in with a recording unit to enable speedy reporting of data to main office in a distant city. Particular application is in hog and beef packing operations.



NON-CORROSIVE...NON-TOXIC

piping systems at low cost

MUELLER BRASS CO. PVC (POLYVINYL CHLORIDE)

RIGID PLASTIC PIPE AND FITTINGS

Mueller Brass Co. PVC rigid plastic pipe and fittings offer the food industry efficient, non-corrosive piping systems at substantial cost reductions. Solutions commonly used by the food industry, such as brine, acetic acid, alcohol, fats and oils will not corrode PVC pipe. The smooth inner wall of PVC prevents deposits from forming and allows a high rate of discharge at all times. The purity of liquids is positively protected. PVC is guaranteed non-toxic and will not impart foreign tastes or odors to the liquid it carries. Its light weight cuts installation time and expense and its permanent built-in finish reduces maintenance costs.

Low installation costs, reduced maintenance and the long, trouble-free life of Mueller Brass Co. PVC plastic pipe and fittings assure the food processor increased savings with each year of use.

NORMAL IMPACT PVC—good impact strength . . . maximum chemical resistance.

HIGH IMPACT PVC — maximum impact strength . . . high chemical resistance.

Pipe is fabricated in 20' lengths; ½" through 3" sizes—I.P.S. schedules 40 and 80. Fittings are available in ½" through 3" sizes; threaded and socket-type for schedule 80 and in socket-type only for schedule 40.

Write for the new Mueller Brass Co. Technical Brochure.

MUELLER BRASS CO.

PORT HURON 53, MICHIGAN

274-C

POLYETHYLENE PIPE AND PLASTIC FITTINGS, COPPER TUBE, VALVES AND FITTINGS

MAIL THIS COUPON

Cyclone Fence, American Steel & Wire
Dept. H-491, 614 Superior Avenue, N.W., Cleveland 13, Ohio
Please have your trained representative call on us to discuss our production problems.

Name ..... Company .....

Address .....

City ..... State .....

Let **Cyclone** carry
your production load

Competitive market prices make production efficiency a more vital part of business success than ever before. Production waste, unnecessary manual handling, or time-consuming carting of products can add unnecessary expense to the price of your product. In many cases, a Cyclone Metal Processing Belt could help make your production line more efficient, thus making your product price more competitive.

We'd like the chance to send one of our trained salesmen into your plant to investigate your own production problems. Chances are he can show you, with facts and figures, exactly how a Cyclone Belt can be a blessing to your profit picture. His suggestions will be tailored to YOUR plant and YOUR product, not just a general sales pitch. There is absolutely *no obligation*.

USS and Cyclone are registered trademarks

Cyclone Fence Dept.
American Steel & Wire
Division of
USS
United States Steel

Manufactured at Waukegan, Ill. and Oakland, Calif. • Sales Offices, Coast to Coast

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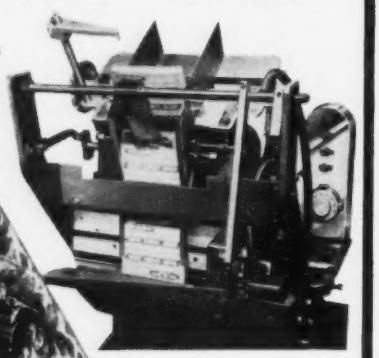
ANOTHER PROFIT-PACKED FEATURE

MERCURY Label Sealer
now with
Automatic
PRICE
Imprinter...



Efficient "all-in-one" operation of the VLS-12 Label Sealer achieves safe, foolproof operation at high speeds . . . folds, seals saddle labels up to 10½" wide. Available with Hole Punch, Date Coder . . . and NOW automatic Price Imprinter!

MERCURY Heat Sealing Equipment Co.
2601 N. HOWARD ST. • Phila. 33, Pa.

Equipment & Supplies

Through use of 5-channel tape unit (photo), further items, such as date, time, clock number, lot number, buying station, and grade, may be included with weight data flashed over wires to central office. Data-punched tapes are simply fed into teletype systems for transmittal.

Data is initially recorded as swinging carcasses move along track. Here, checks are made by a special Multi-Scan unit that senses, then quickly averages, 10 weight readings for each load within 2½ sec. intervals.—*Toledo Scale Co., Toledo 12, Ohio.*

Circle 60 on Reader Service Card

Multi-Purpose Stacker

Either single or double-deck block-type pallets or skids are handled by the facile new lightweight Transporter (Model WOAT) fork-over-arm stacker. Special design makes it a multi-purpose truck.

Units are offered in 2, 4, and 6,000-lb. capacities, with variety of fork lengths, widths, and lifting heights.—*Automatic Transportation Co., 149 W. 87th St., Chicago.*

Circle 61 on Reader Service Card

New 'Felt' Has Many Uses

A new non-woven, synthetic-fiber material—Troyfelt—is available for food-industry filtering functions. It also makes a superior gasketing and insulation material as well as excellent tank linings and vibration dampeners.

Use of the synthetic in filtering food liquids, such as milk, beer, and oils, is especially efficient due to the chemical stability of the material which, further, will not support rot, mildew, or bacteria growth.

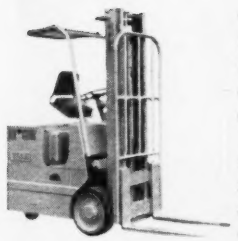
Various synthetic fibers, including

For more data, circle 328 on Reader Service Card

For more data, circle 329 on Reader Service Card

Short Yale Electric Truck increases profits

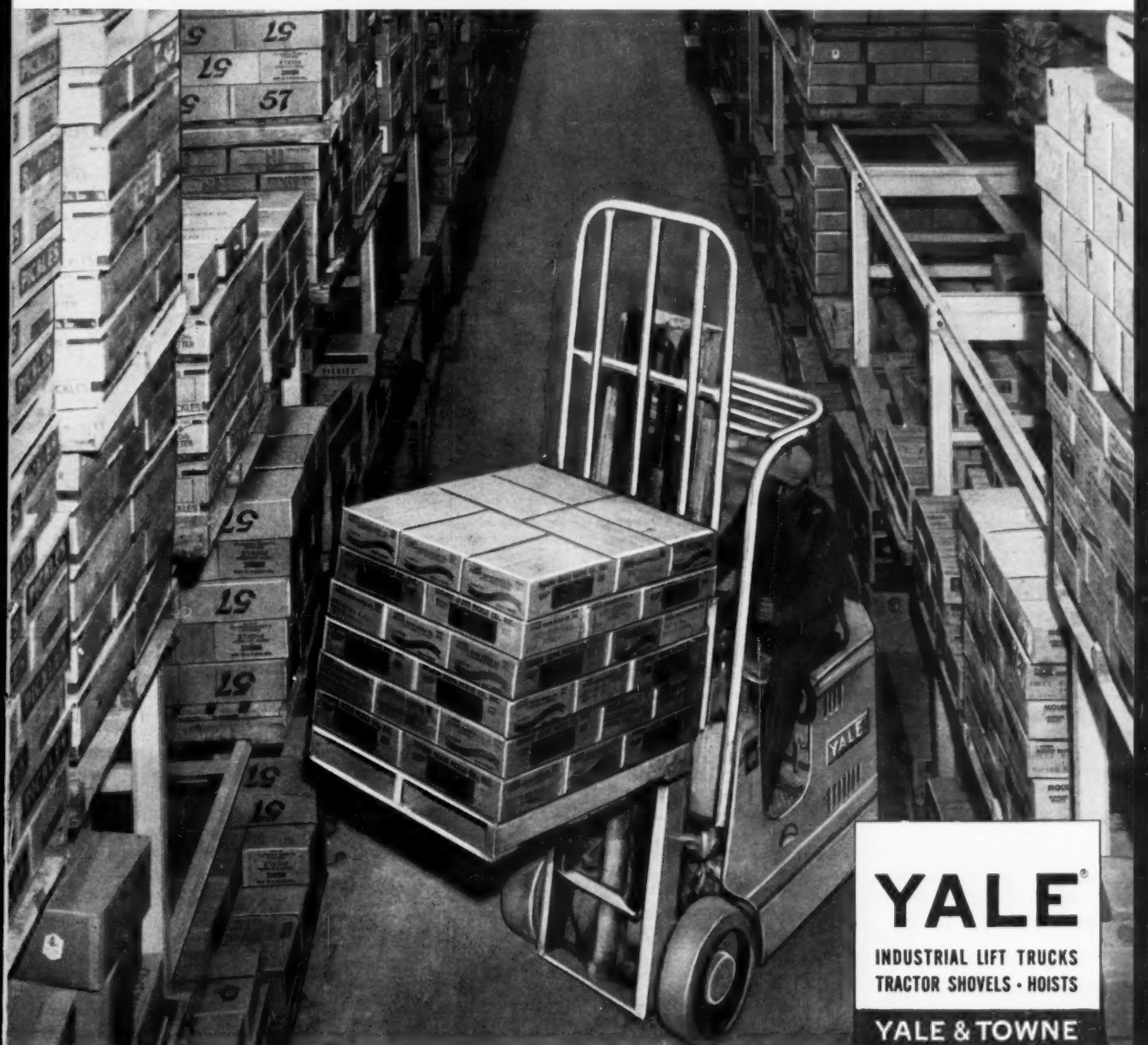
Shortest sitdown truck brings extra lifting and travel speeds, ease of operation, into narrow aisles



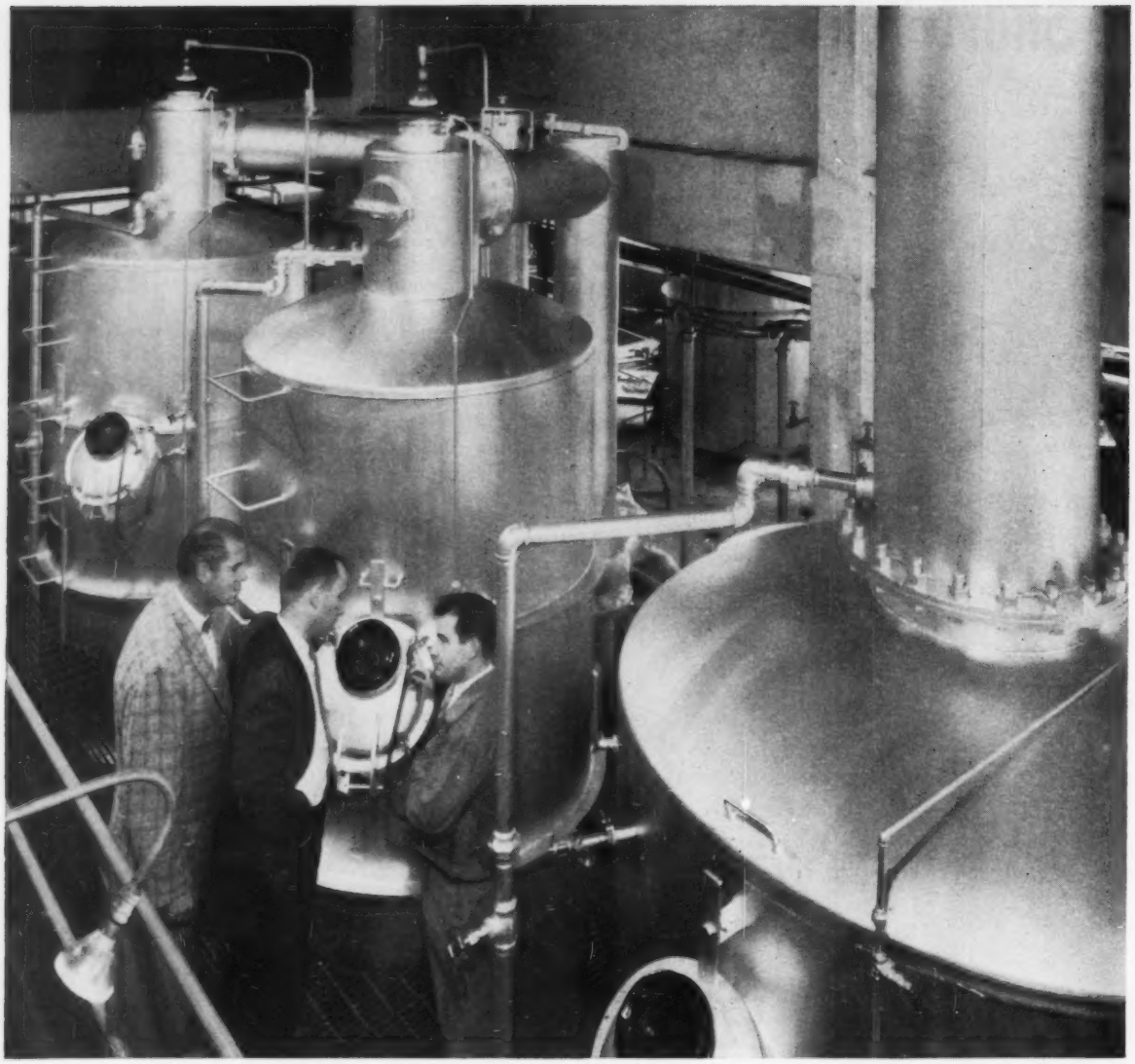
The Yale K51W has the highest battery capacity per cube for full 8-hour shift, fast lifting and travel speeds. Yet, with only 68" from front face of forks, it is compact enough for narrow aisle operations—even in aisles as narrow as 9' 10".

Features such as *dual castor wheels* provide ease of steering and greater stability. Exclusive, dependable Yale *Cam-O-Tactor* increases speed and time-delay control—prevents motor overload—provides longer truck life. *Dead-man control* automatically shuts off power and applies brakes when operator leaves truck. *Extra visibility* is provided through low cowl and open channel design. *15° tiltback* increases load stability.

Lifting speed: 50' a minute—travelling speed: 6½ mph—inching control—capacities: 3,000 to 5,000 lbs. For complete information and demonstration contact your Yale representative. Or write The Yale & Towne Manufacturing Co., Yale Materials Handling Division, Philadelphia 15, Pa., Dept. KT2-V.



Yale Materials Handling Division, a division of The Yale & Towne Manufacturing Company. **Manufacturing Plants:** Philadelphia, Pa., San Leandro, Calif., Forrest City, Ark. **Products:** Gasoline, Electric, Diesel and LP-Gas Industrial Lift Trucks • Worksavers • Warehousers • Hand Trucks • Industrial Tractor Shovels • Hand, Air and Electric Hoists



Processing 40,000 tons of tomatoes a year, this Buflovak triple-effect evaporator accounts for 60% of the plant's annual output. From left to right: American Home Foods Technical Director, Arnold Cornett; Plant Engineer, Peter Mayer; and Production Manager, Larry Meck.

American Home Foods boosts tomato paste production over 100% with a Buflovak Triple Effect Evaporator

"Our triple-effect evaporator requires no more steam or labor than our other equipment uses." So reports Larry Meck, production manager of the Oakland plant of American Home Foods, Division of American Home Products.

The evaporator turns liquor of 6% solids into a paste of 30% solids. The process saves thousands of dollars in container and shipping costs each year.

Operates at 20% over capacity. "Although the evaporator is designed to evaporate 44,800 pounds of water, we push it during peak runs to 20% above this with no deterioration of product quality. Maintenance is simple and we have had no downtime at all for mechanical failures in three seasons of operation."

Let Buflovak boost your production. Buflovak has a completely equipped customer service lab to let you test a product in test tube or carload lots. And the Buflovak line of evaporators and dryers is complete. You select the unit best suited to upgrade your process based on impartial test results or your own specifications. For details send for Catalog 372 on evaporators, 385 on dryers, or 381 on the lab.

BLAW-KNOX

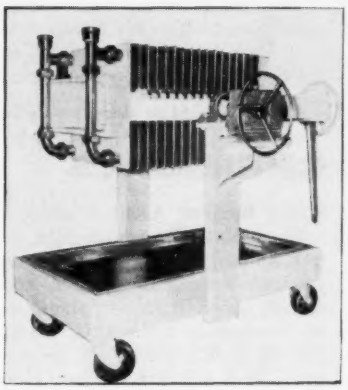
BLAW-KNOX COMPANY

Buflovak Equipment Division

1543 Fillmore Avenue, Buffalo 11, New York

Dacron and Orlon, are used in making the new felt. It is offered in a variety of widths, and in a range of thicknesses, densities, and permeabilities.—*Troy Blanket Mills, 200 Madison Ave., N. Y. C.*

Circle 62 on Reader Service Card



Tilt-Type Filter Press

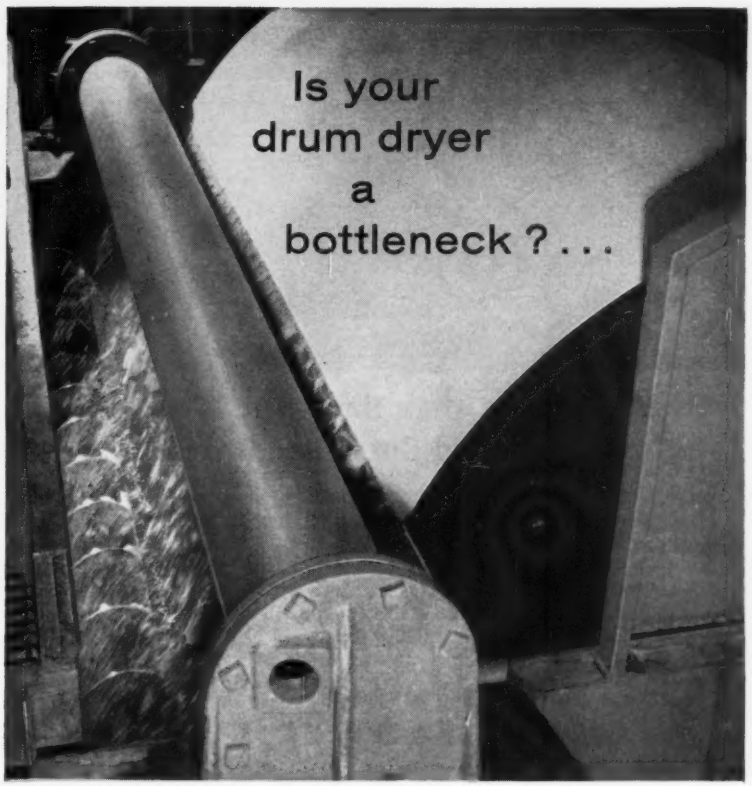
New processing filter press, the Terriss, affords filtration surface ranging from 15 to 100 sq. ft. using 2 to 35 plates. Machine is moved from loading position (photo) to operating position (vertical) by means of worm gear. Filter cake, states maker, won't fall away from 18x18-in. plates during runs, even with pressure drop to zero. Constructed of stainless steel, unit has no-leak precision-ground surfaces.—*Terriss Div., Consolidated Siphon Supply Co., Inc., 22 Wooster St., N. Y. C. 13.*

Circle 63 on Reader Service Card

Plastic Sheaths Guard Tags

Life of card tags—so essential in flagging units relative to operating details, inspections, cleaning routines, etc.—is far too short.

They soon fray and tear. Or their



Use RHOZYME Diastatic Enzymes

If you process cereal grains or other starch foods, would you like to increase production several-fold with your existing plant equipment?—Do it with RHOZYME Diastatic Enzymes. RHOZYME action on cooked starches lowers their viscosity. Less water is required to process a given weight of solids, and since your dryers have less water to evaporate, their capacity is substantially increased. Also, the saccharifying action of the enzyme makes your cereal sweeter, and the volume of fines in the dried product is reduced.

In addition to aiding the processing of cereals, RHOZYME enzymes are particularly valuable in: *Production of Corn Sirup*—by saccharifying corn starch to make sweet, non-bitter sirups . . . *Production of Cocoa Sirups*—by lowering viscosity and eliminating set-back, so that sirups pour more readily . . . *Bread Making*—by modifying bread starch for better texture, grain, and shelf life . . . *Sugar Recovery from Candy Scrap*—by reducing the viscosity of the starch content; this permits efficient flavor and color removal at higher solids levels.

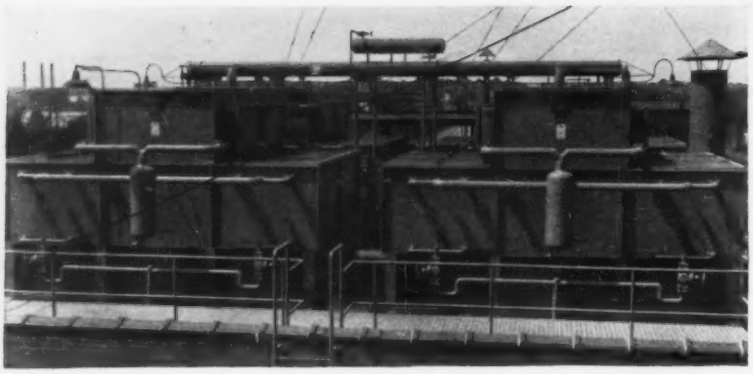
Chemicals for Industry

ROHM & HAAS COMPANY

WASHINGTON SQUARE, PHILADELPHIA 5, PA.

RHOZYME *is a trademark, Reg. U.S. Pat. Off. and in principal foreign countries.*

Write Department SP-4 for technical notes.



"Prevents More Than Half Your Troubles With Refrigeration and Cuts Your Operating Costs"

Plant managers who watch costs and engineers who must keep plants running say that the Niagara Aero-pass Condenser is the one piece of equipment that can always be trusted to keep troubles away and costs down. You get *always* full capacity. You run at consistently low head-pressures. Low temperature condensing means freedom from scaling. Niagara sectional design gives you the easiest maintenance and always "new plant" efficiency, even after years of use. New models also give you lower first cost per ton of refrigeration.

Write for Bulletin No. 131

NIAGARA BLOWER COMPANY

Dept. FE-4, 405 Lexington Ave., New York 17, N. Y.

Niagara District Engineers in Principal Cities of U. S. and Canada

For more data, circle 332 on Reader Service Card

CUT COSTS WITH SEALTITE

- Delivers a well settled, nicely squared bag at top, bottom and sides
- Pre-scored, double fold, uniformly glued seal keeps product in and dirt out
- Uses any standard make of gusseted bag — no royalties
- Seal readily opened, yet tamper-proof
- Seals 30 to 50 bags per minute
- Users report costs reduced up to $500.00 per month per machine

Write for complete information

CONSOLIDATED PACKAGING MACHINERY CORP.

BUFFALO 13, NEW YORK

For more data, circle 333 on Reader Service Card

Equipment & Supplies

printing fades due to the brunt of regular cleaning inside the plant or weathering when they're placed in outside areas.

All this is rectified by transparent-plastic tag protectors (photo)—low-cost sheaths which fully guard the cards while maintaining clear readability of both sides. They come in three sizes to take any standard tag. —*Bedford Products Inc., P. O. Box 36, Roanoke, Va.*

Circle 64 on Reader Service Card

CHEMICALS

Strong Bonding Agent is newly developed Kwik, a special latex contact adhesive. For joining both like and unlike surfaces—plastics, wood, metals, concrete, etc.—material may be brushed or troweled on. Or it may be water-thinned for spray application.—*Adhesive Products Corp., 1660 Boone Ave., N. Y. C. 60.* (65)

Repair Compound called Plastic Mastic is versatile epoxy-polyamide for fixing breaks in all kinds of surfacing, also tanks, fixtures, and like. In application, white base and black hardener are blended for troweling on. Tough cured material can be sanded, drilled, or machined as desired.—*Williamson Adhesives, Inc., 8220 Kimball Ave., Skokie, Ill.* (66)

Teflon Pipe Gaskets are offered for full range of fittings, unions, and flanged joints. Inert, low-friction units remain stable over wide temperature range.—*Amasco Products, 79-22 71st Ave., Glendale, N. Y.* (67)

Battery-Run Pump (6 or 12v.) is compact bronze-fitting portable using butyl-line hose. Will handle liquids at 15 gpm.—*Transfer Pump Co., Osburn, Ida.* (68)

New Process Analyzer detects refractive-index differences between process stream and desired sample. Operation is continuous. Applications: Regulation of blending and control of stream impurities, concentration measurements, checking of compounds from fractionators, stills, or chromatographic columns.—*Phoenix Precision Instrument Co., 38-3 N. 5th St., Phila.* (69)

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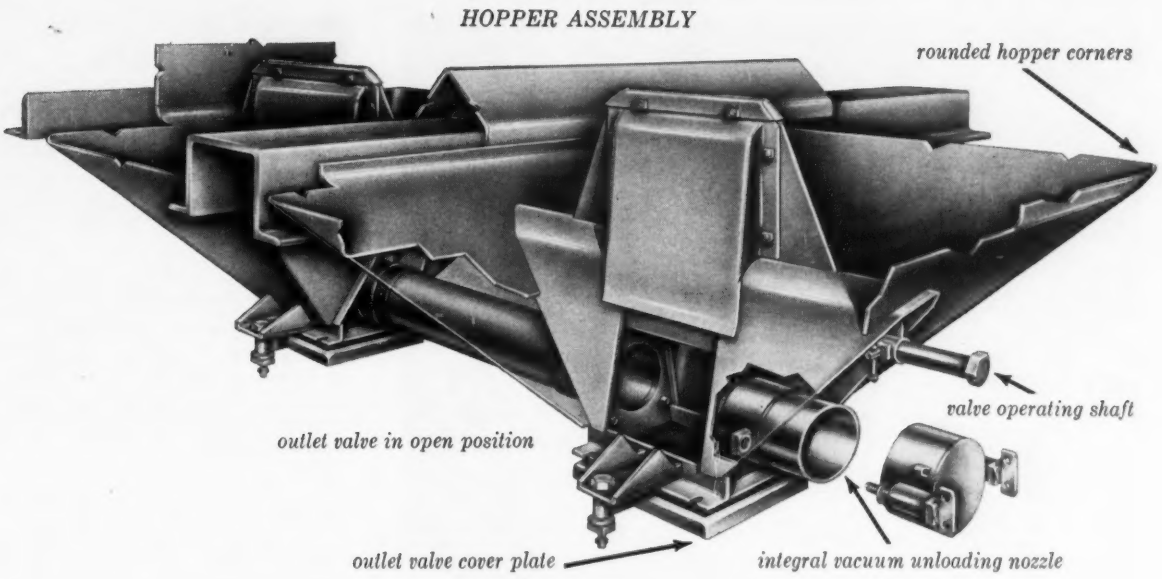

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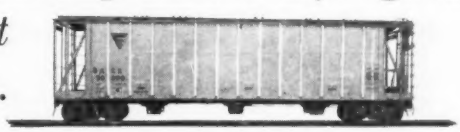
Unloading gates of the DRY-FLO car are entirely within the car insuring ease of operation and eliminating pickup of foreign material. Gates open and close vertically and are not subject to pressure from within. The rate of flow of product through the unloading gates can be adjusted as desired.

The DRY-FLO car is ideal for bulk shipment of dry ingredients, particularly products that *must be protected* from contamination.



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operation by requiring only one sheet rather than usual two.—*American Photocopy Equip. Co., Evanston, Ill.* (70)

Latest Shipping Carton for poultry is extra-strong 'Control-Pak'. Features: Deeper, firmer hand holds; notched corners for ice drainage; 3-layer corrugated construction for optimum chill control.—*Stone Container Corp., 4200 S. Keeler, Chicago.* (71)

Augmented Aerosol Valve (Magna-Meter) employs auxiliary chamber to dispense gaged quantities up to several c.c. rather than mere minute bursts. This opens new possibilities for liquid-food packaging.—*The Risdon Mfg. Co., Naugatuck, Conn.* (72)

Plastic Bench Tops and Sinks, made from Duracor, combine light weight with high strength, resist acids and alkalies, and will take temperatures to 300 F. One-piece molding eliminates such problems as sealing of the sink.—*The Ceilcote Co., 4883 Ridge Rd., Cleveland.* (73)

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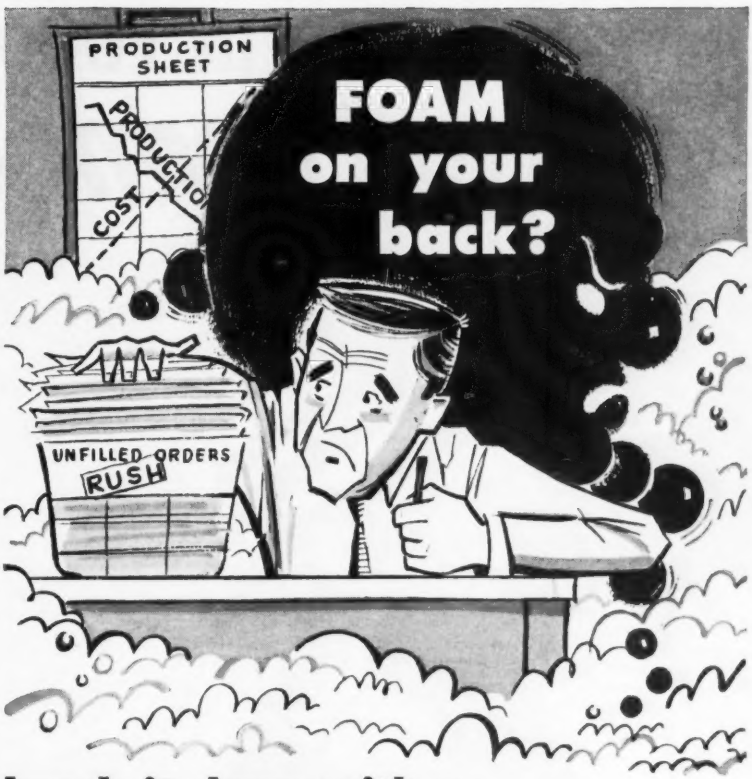

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NORTH CAROLINA

NEWEST PLANT OF THE WORLD'S LARGEST MEAT PACKER

Swift's Premium

Early this year, Swift and Company began full line production in Wilson, North Carolina. The expansion decision was based on three factors: the rapidly growing consumer-demand market of the Southeast, the enormous potential for increased production, and the initiative of the people in groups and individually.

North Carolinians cooperated to show Swift that they could meet quantity and quality requirements of beef and swine and pointed out acreage they would convert to pasture and grain. Swift liked the initiative and cooperation North Carolinians gave on every level, from Community to Governor.

Opportunities for development of food processing plants with ready supply and enormous potential for increased production are now at an all time high. For prompt and confidential plant location information you are invited to contact Wm. P. Saunders, Director, Department of Conservation and Development, Raleigh, North Carolina.

North Carolina's Business Man Governor Luther H. Hodges (left), at Swift ground breaking, discusses new plant with E. B. Fletchall, Executive Vice President of Swift, and S. M. Cozart, Chairman, Wilson Industrial Council.

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JUST OFF THE PRESS

PLANT ENGINEERING

Air Filter. Explains construction and operating characteristics of automatic renewable media unit. 10p.—American Air Filter Co., Louisville, Ky. (74)

Gate Valve. Details advantages of new bonnetless forged steel units. 16p.—Velan Valve Corp., Plattsburg, N. Y. (75)

Couplings & Fittings for every type industrial rubber hose. 8p.—Hose Accessories Co., Philadelphia. (76)

Couplings Catalog. Discusses company's 3 types—straight-through, single check-valve, and double check-valve. Contains drawing and tables. 20p.—Titeflex Inc., Springfield, Mass. (77)

Air Dryers. Describes units with capacities up to 3,000 cfm. 10p. — Van Products Co., Erie, Pa. (78)

Process Pumps. Describes new line of heavy-duty medium temperature units for use where water-cooling of stuffing box and bearings is unnecessary. Versatile design permits conversion to water-cooled operation. 6p.—Ingersoll-Rand Co., N.Y.C. (79)

Mixers. Discusses theory of mixing and compares operations of different types of equipment. — Infilco Inc., Tucson, Ariz. (80)

Photo-Drawing. Details new combination method for more effective use of engineering drawings. 4p.—Technical Reproduction Service, Newark, N. J. (81)

Hot-Water Coils. Dimensional data on wide range of sizes for central station or zone air conditioning systems. 2p.—Halsted & Mitchell, Pittsburgh. (82)

Aluminum Line Strainers. Details lightweight, corrosion-resistant units. 4p. — OPW Jordan, Cincinnati. (83)

Prefilters. Lists uses, details operation of items for compressed air and gas systems. 2p.—Desomatic Products, Inc., Falls Church, Va. (84)

"Pancake" Motor. Describes radial air-gap design of short length for use in space-cramped applications. 4p.—Louis Allis Co., Milwaukee. (85)

Atomizing Burners. Lists 11 sizes for oil, gas, and combination gas and oil firing units. 8p.—Orr & Sembower, Inc., Reading, Pa. (86)

Packaged Steam Generator. Covers, standard and optional equipment, capacity and dimension tables, cutaway drawing. 4p.—Foster Wheeler Corp., N. Y. City. (87)

Adjustable Speed Sheave. Features new, simplified design for pitch diameter adjustment. 1p.—Allis-Chalmers, Milwaukee. (88)

Belt Saver Pulleys. Details wing and cone type units. Tables give diameter, face width, minimum and maximum bore, ship. wt., and list price of almost 500 different sizes. 4p.— Sprout, Waldron & Co., Inc., Muncy, Pa. (89)

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Variable - Speed Drives. Covers mechanical construc-

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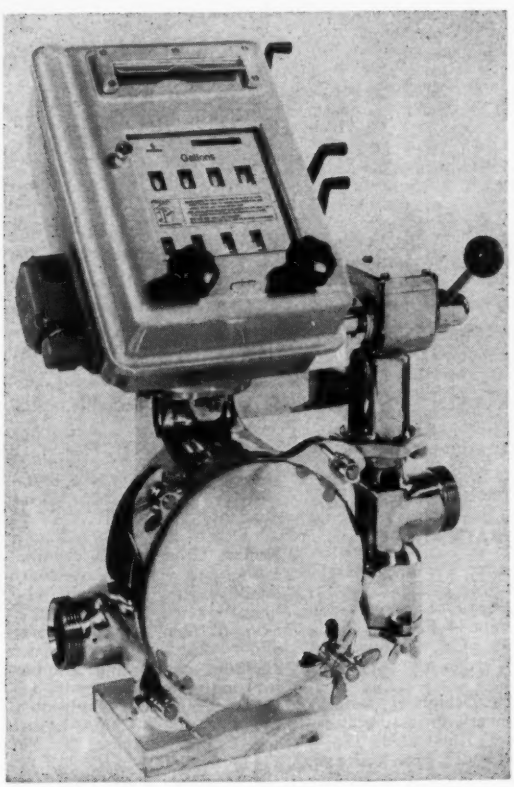

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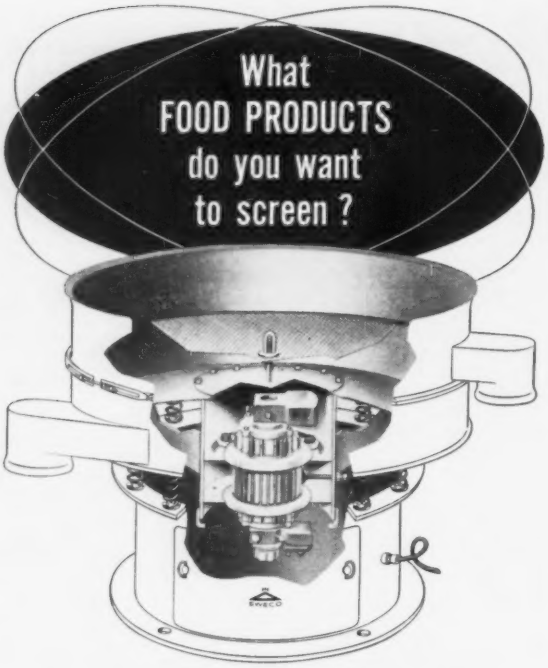

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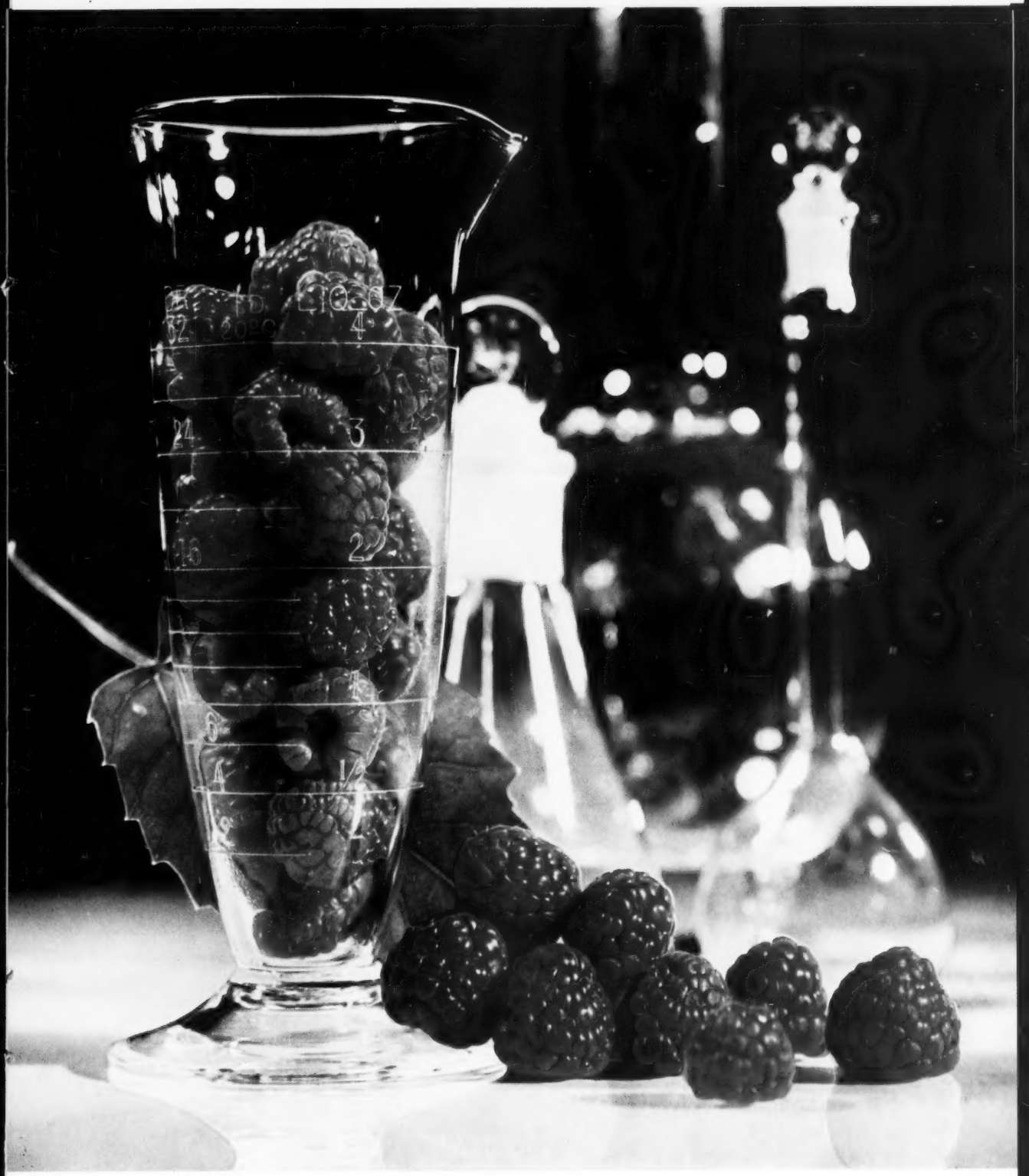

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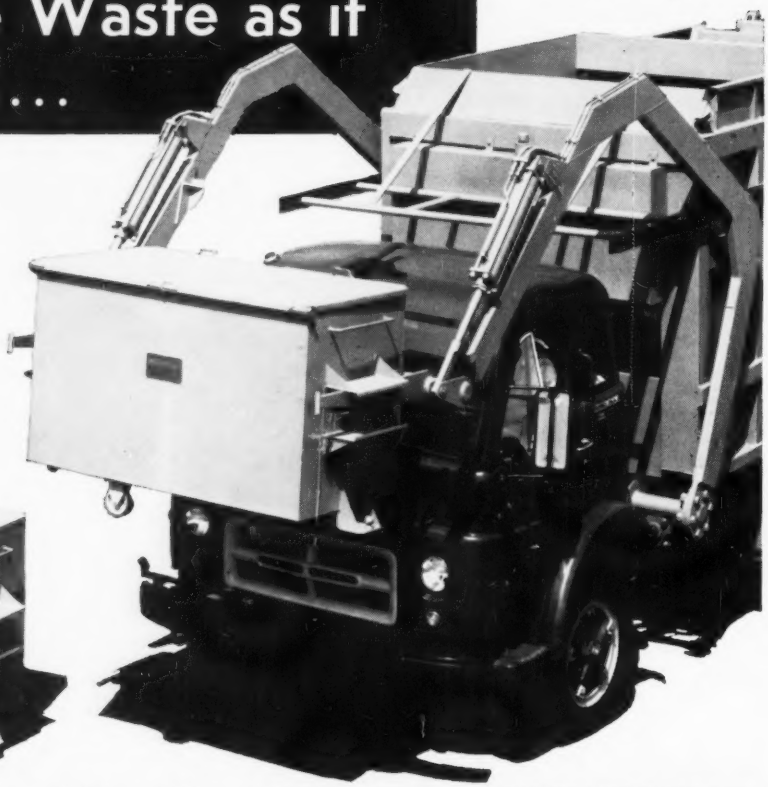

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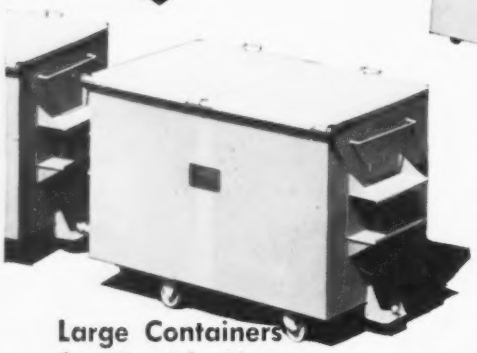

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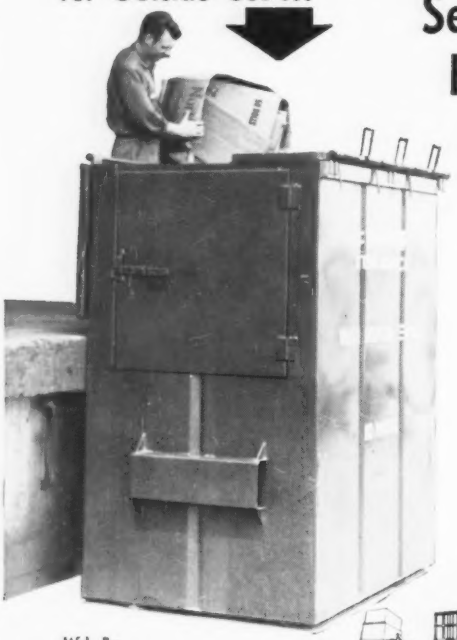

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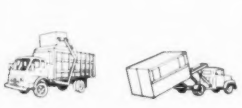

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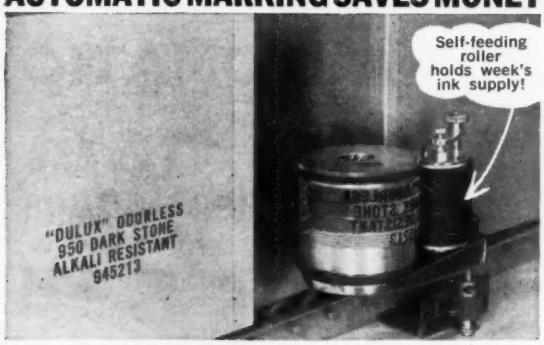

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tion of tomato-color for USDA. 4p.—Magnuson Engineers, San Jose, Calif. (123)

Amino Acid Analyzer. Describes automatic recording unit. Lists applications, sensitivities, ranges, and other data. 12p.—Phoenix Precision Inst. Co., Philadelphia. (124)

INGREDIENTS

Enrichment. Outlines regulations and suggestions for required dietary labeling. Answers marketing, sales, advertising, and production questions. Table itemizes standards and labeling requirements.—Merck & Co., Rahway, N. J. (125)

Essential Oils. Reviews background of U. S. essential oil business, details physical and chemical properties, uses of firm's products. — Magnus, Mabee & Reynard, N. Y. City. (126)

Pickle Flavors. Tells how newly developed blends of essential oils in neutral solvent may be incorporated directly in brine.—Dodge & Olcott, N. Y. City. (127)

Sodium Bisulfite. Covers specific uses in food processing and other fields.—Monsanto Chemical Co., St. Louis. (128)

MANAGEMENT

Modular Displays. Illustrates and describes preplanned merchandising units for expositions and trade shows. 4p.—Functional Display, Inc., N. Y. City. (129)

Convention Planning. Guide for exhibitors gives pointers on show evaluation, cost factors, staffing, building, dismantling, and shipping the booth. Includes pre-show checklist. 10p.—Manpower, Inc., Milwaukee. (130)

Data Processing. Describes new, low-cost system specially designed for small business.—Remington Rand, Div. of Sperry Rand Corp., N. Y. City. (131)

R&D Services. Describes independent labs activities, lists some industrial and governmental agency clients. —Evans Research & Development Corp., N.Y. City. (132)

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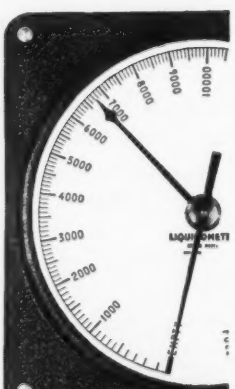

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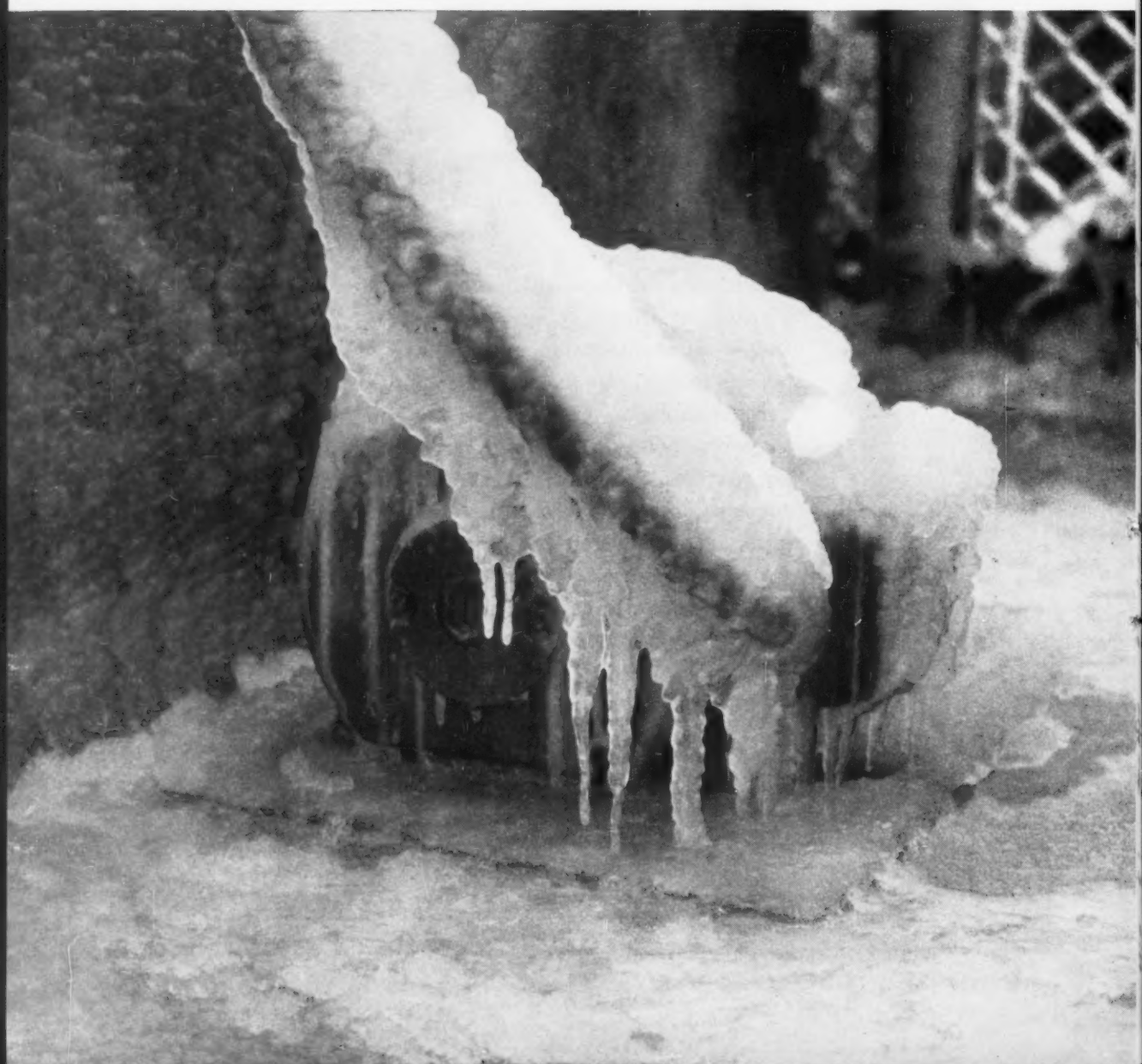

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WHAT EVERY SUPERVISOR SHOULD KNOW *By Lester R. Bittel. Published by McGraw-Hill Book Co., 330 W. 42nd St., New York City 36. 1959. 451 pages. Price:* $7.95.

Described by the author as "the truth about supervision", this book is an honest and authoritative attempt to explain realistically the problems faced by the new supervisor or beginner in management.

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For the Food Engineer

DISPERSION OF MATERIAL. *By Rolt Hammond. Published by Philosophical Library, Inc., 15 E. 40th St., New York City 16. 1958. 220 pages. Price:* $10.

Food men will find the sections on flotation and liquid dispersions in this volume of particular interest. Part of a series called the "Physical Processes in the Chemical Industry", the book is designed for men with engineering background.

Book is illustrated.

Booklets & Reports

LOADING OUT FRUITS AND VEGETABLES IN WHOLESALE WAREHOUSES (*Market Research Report No. 282*) *Published by USDA, Washington 25, D. C. No charge.* Study of methods and equipment.

FLOW PROPERTIES OF BULK SOLIDS. *Published by University of Utah, Salt Lake City 12, Utah. 1959. 51 pages. Price:* $1.50. Report on a project to develop a quantitative method of design for flow of bulk solids in storage systems.

ANALYSIS OF COFFEE GRINDS (*Publication No. 32*). *Published by the Coffee Brewing Institute, New York 17, New York. 8 pages. Price: No charge.* Detailed description of the techniques and equipment employed in conducting the analysis which is the basis for the standard grind classification recommended to the industry over a decade ago.

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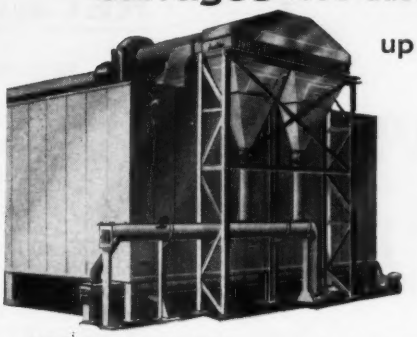

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Granular Meat Tenderizer Comprising Protein-Splitting Enzymes. Concentrated Meat Extract, Salt, Sweetener—F. R. York, Boulder, Colo. No. 2,857,284.

Striped Cereal Flakes Made By Adding Striping Material Between Extruded Dough Strips, Slicing to Thin Wafers, Heating—General Mills, Minneapolis. No. 2,858,217.

Cereal Flakes With Raspberry-Like Appearance—General Mills, Minneapolis. No. 2,858,218.

Flavor-Stable Rearranged Fats From Domestic Oils—The Glidden Co., Cleveland. No. 2,859,120.

Nut Products Coated With **Sorbitol.**—The Best Foods Co., N.Y.C. No. 2,860,053.

Pepper Solution Solubilized With Acid, Alcohol, and Acetone.—National Dairy Products Corp., Chicago. No. 2,860,054.

High Protein Pellets Made by Drying Dehydrated Lean Meat With Coconut.—E. F. Coles, Prineville, Ore. No. 2,861,888.

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Combining Milk With Fruit Juice to Form Stable, Smooth-Consistency Product — J. E. Hughes, N.Y.C. No. 2,853,386.

Preparing Quick-Cooking Cereals With Proteolytic Enzymes—Arthur D. Little, Cambridge, Mass. No. 2,853,388.

Processing All-Fat Plastic Shortening Continuously—Canada Packers, Ltd., Toronto, Canada. No. 2,853,390.

Curing Pork Bellies by Forming Localized Pools of Pickling Solution Within Fatty Sides.—Griffith Laboratories, Chicago. No. 2,854,342.

Deep-Fat Frying Potatoes by 15-30-Sec. and 2-5-Min. Immersion in Hot Fat—Brock & Co., Philadelphia. No. 2,855,308.

Puffing Bacon Rinds by 15-Sec. Immersion in 1% Acetic Acid and Deep-Fat Frying—Swift & Co., Chicago. No. 2,855,309.

CO_2-Gassing Green Coffee Beans to Improve Aroma and Stabilize—H. W. Bach, Weisbaden, Germany. No. 2,855,313.

Improving Pre-Sized Compressible Sugar-Base Flavor Particles Used in Preparing Food Pre-Mix—Pillsbury Mills, Minneapolis. No. 2,856,287.

EQUIPMENT

Scalding System for Conveyed, Shackled Poultry — Pickwick Co., Cedar Rapids, Ia. No. 2,852,805.

Dough-Make-Up Unit Comprising Divider and Molder-Panner—Baker Perkins, Saginaw, Mich. No. 2,853,029.

Citrus-Juice Extractor Comprising Fruit Pick-Up Unit and Reamers—Brown Citrus Machinery Corp., Whittier, Calif. No. 2,853,107.

Shrimp Peeler With Pair of Inclined Rotary Cones to Separate Shell From Meat—E. F. Greiner, New Orleans. No. 2,853,733.

Hamburger-Patty Former — T. B. Thomas, New London, Wis. No. 2,853,734.

Deep-Fat Fryer With Overflow Fat System for Washing Conveyor Discharged Fried Foods —H. E. Peck, Fairport, N. Y. No. 2,853,937.

Sandwich Making Machine for Cookies—The E. T. Oakes Corp., Islip, N. Y. No. 2,853,961.

PACKAGING

Machine for Evacuating, Gassing, and Sealing Flexible Packages.—Standard Packaging Corp., N.Y.C. No. 2,858,655.

Packaging and Cooking Container Comprises Bag With Upper Portion of Plastic Film and Bottom of Two-Ply Foil Laminate to Support It in Upright Position—Foil Process Corp., Van Nuys, Calif. No. 2,858,970.

Container With Sealed and Plastic-Reseal Closures.—Crown Cork & Seal Co., Inc., Philadelphia. No. 2,860,814.

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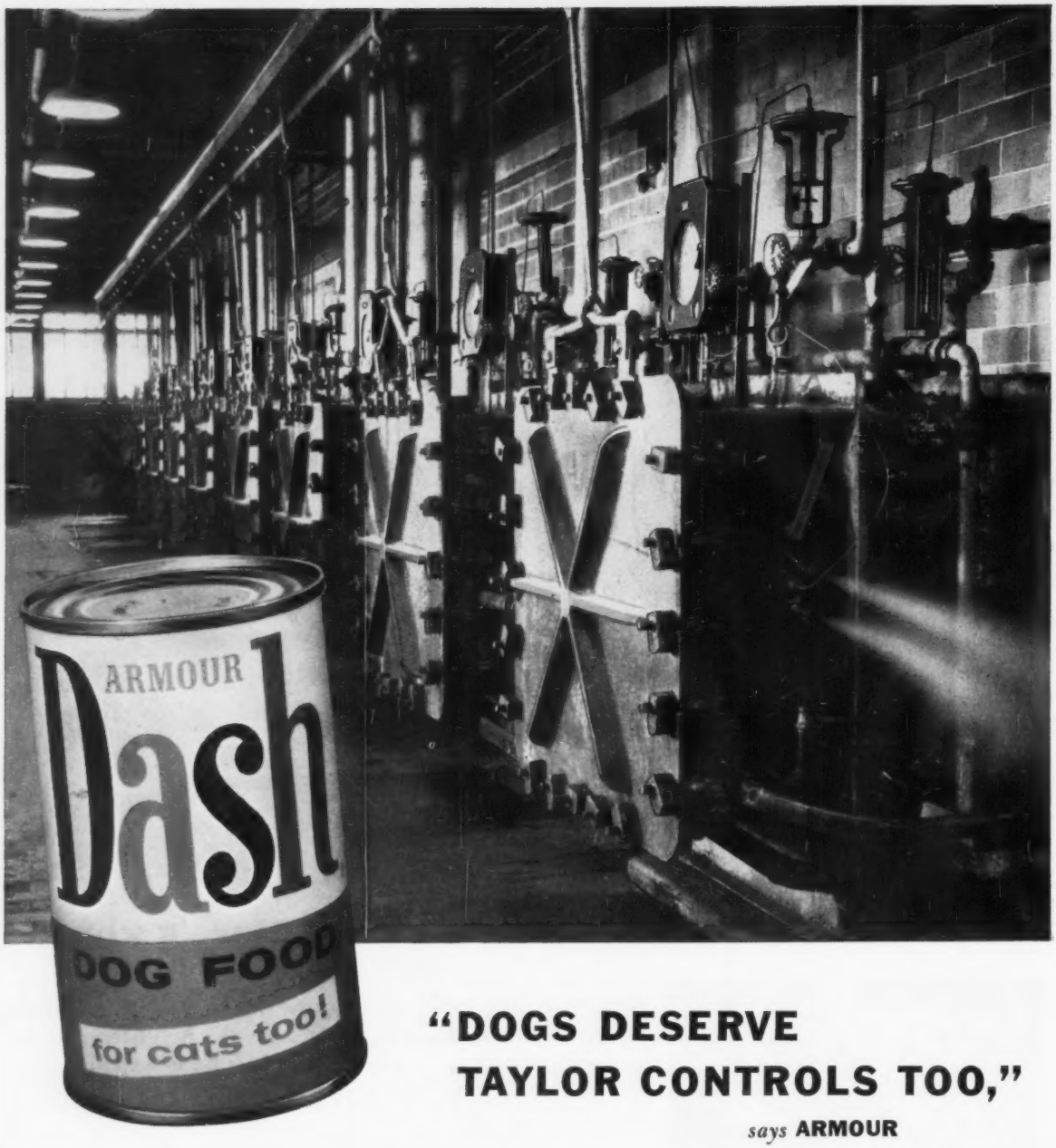

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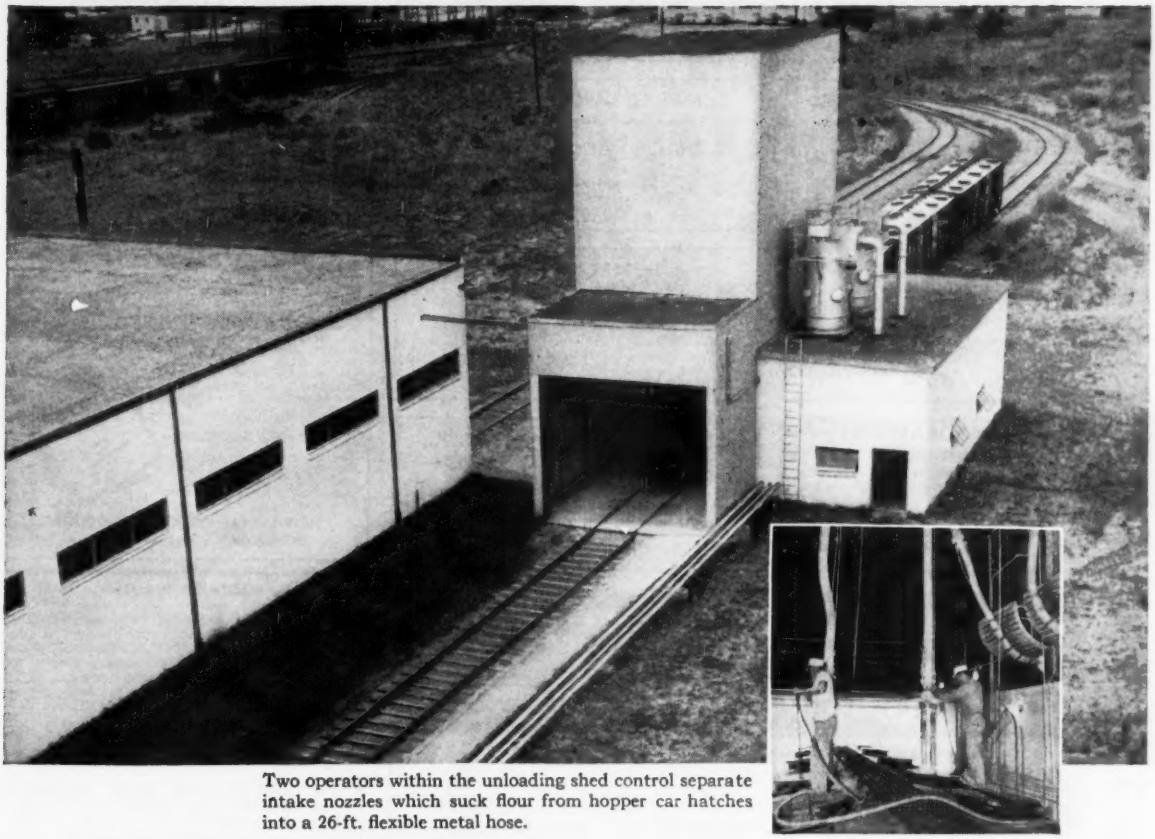

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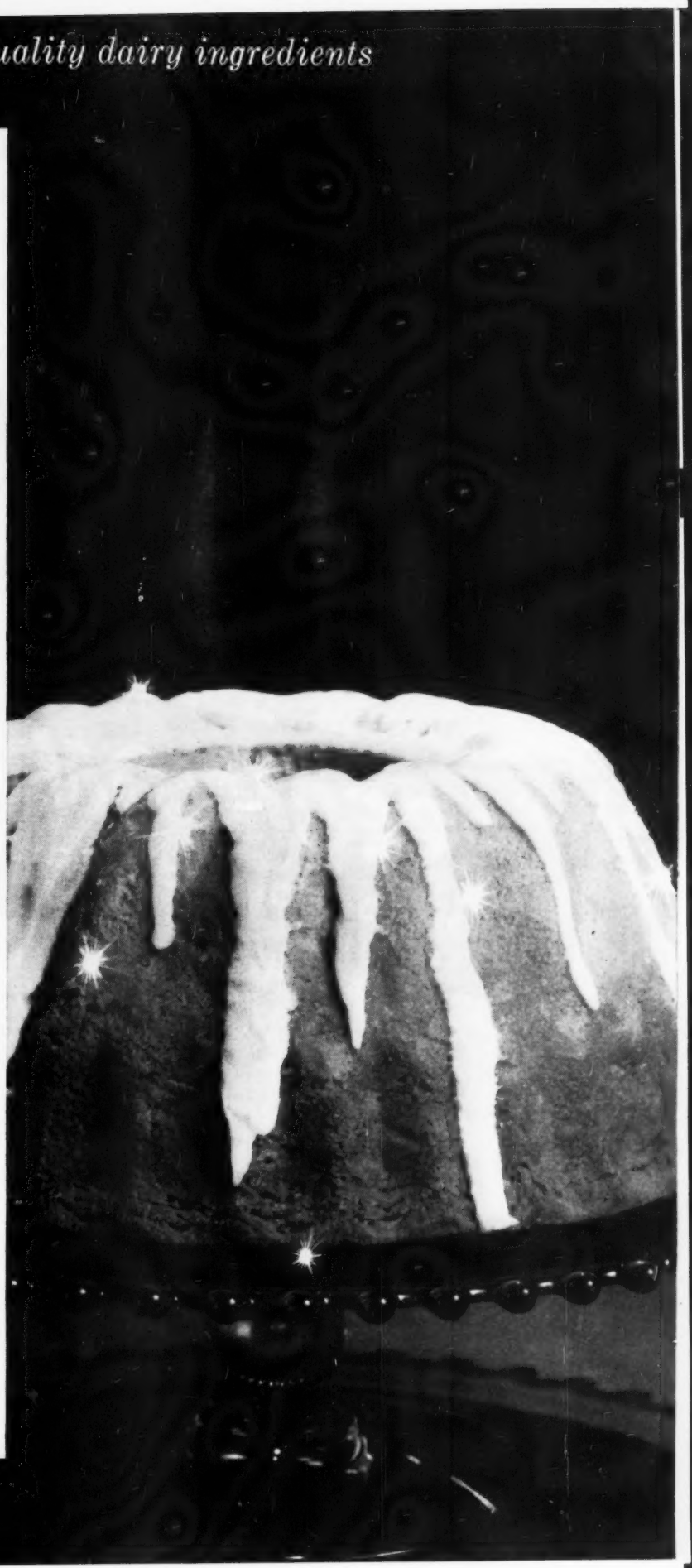

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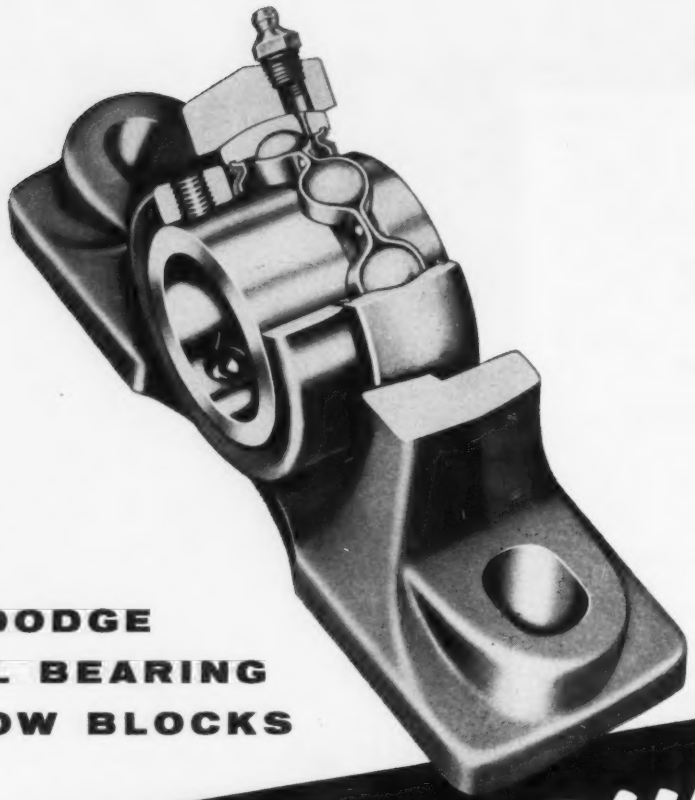

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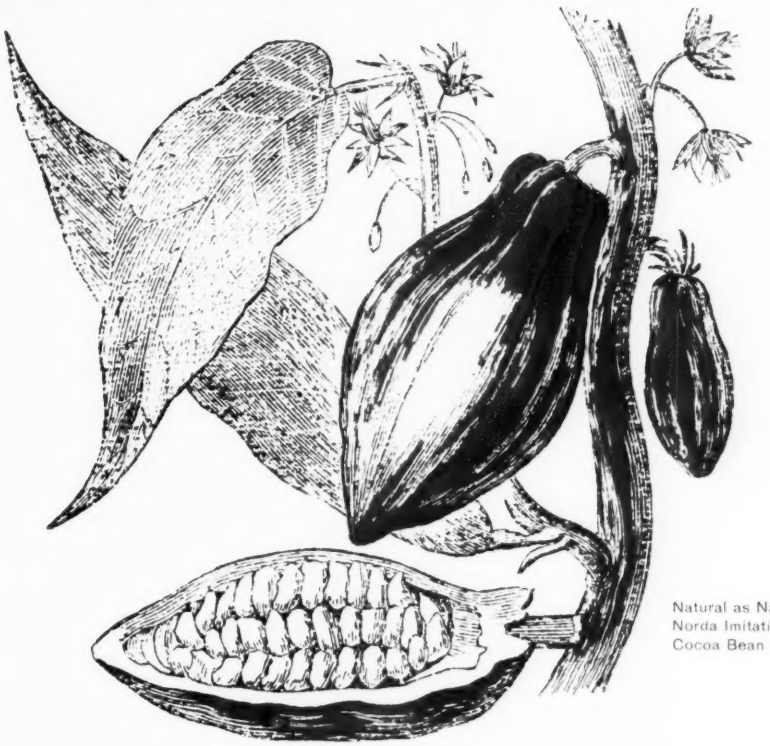

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